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NEWS IN BRIEF ICL succeeds with DHSS

A CONTRACT for four ICL 2950s which could lead to orders for a further 22 has been awarded to ICL by the Department of Health and Social Security. It was won in open tender with many other suppliers and is to automate the processing of incopncity and

Bath in 1981.

RAC automates

MEMBERSHIP, subscriptions, and accounting are among the functions to he handled by a PDI'-11/34 being installed by the Rayal Automobile Club. The systems are being implemented in Filetnb by consultants Pactel in conjunction with Ace Micro-

Council switch

SWITCHING from its ICL 1902T. to in ICL 2956, Camilen Council ha: become the ninth Lundon borough to install a 2900 range system, The £750,000 machine win he delivered early next year and will then handle online database applications such as housing, finance and social services as well as supporting a network of VDUs.

Turnover doubled

THE Systems Designera group reports a turnover of £2,756,483 for the year ended Jonuary 31, more than double the previous year's figures of £1,326,938. Pre-tnx profit was £221,574 for tha group, which comprises Systems Designers and Systems Produc-tinn. The NEB has a 26% holding in the company.

\$15m contract

iN a continuation of its business with OEM printer specielist Dataproducts Corp, Burrougha has placed a \$15 million contract for microprocessor driven 320 and 650 Ipm printers.

rent computer thinds and as such way into every part of our lives."

Taking that as his hase, he cx- that of the microfactory on a chip. plained that a people amplifier which could be seen in the early appliance would provide an in- 90s.

BY the nild-1980s, technology will dividuel with any information or hove evolved sufficiently for n training he required.

ding to Earl Joseph, Univac status. This will happen because it is uneconomic to produce small South of France last week, Joseph we do now. In the future, millions, if said such "futuristic forecosts" not billions of copies of a design will were strict extrapolations of cur- be made and they will find their

One novel example he added, was

Coming of 'people amplifiers' complete computer to be fabricated "I see technology producing the crops and then seiling his produce as a single component, and de- library, school, or office on a chip," at a morket, he could, in the future, vices known as "people amplifier and Joseph. "Quite soon computers and Joseph. "Quite soon computers will be reduced to a nut and bolt ding the Fart Joseph. Helical Televisian State of the Computer of the C

Turning to another area, Joseph nuturist.

Soeaking at a conference in the numbers of a particular muchine as projected computer trends over the next deende.

> In terms of automobiles. It would be possible to devise vehicles with automatic collision avoidance systems that would need no operators or drivers and have little need



Partners fall out over A twin 2950 development system will be installed in Reading and a pilot trial will begin in Bath in 1981. A twin 2950 development system will be installed in Reading and a pilot trial will begin in Bath in 1981.

the other major French shareholder in Cli-Honeywell Bull, CGE, are in disagreement about the future direction of the

Another blg Industrial company, St Gobain-Pont-à-Mousson, is keen to take a substantial shareholding, and the disagreement should improve its prospects (CW, July 5).

puter staff are expected to reject

If the ballot of tha 45,000 Post

Civil and Public Servanta la In

orlvate sactor or with Post

An SCPS spokeaman aald,

"Because of this situation, we

are seeing a very rapid turnover of staff, and if just two more

favour of the offer.

rejecting a request from the French government, but neither CGE nor the Industry Ministry will divulge details of the re-

The statement atarts by noting that CII-HB's financial and technical performance since It was formed in 1976 has been company pien which CGE in- decided that it must decline."

operation going. It is not just

The SCPS computer atsff may

Bank offer doubled

THE threat of strika action by

computar staff at the fiva main

revised pay offer. The five banks eers

of a viable career path."

stores control staff.

puter staff are expected to reject billing using the Loo 326s leave, the latest pay offer, and switch there will be nobody ax-

from official to unofficial action, periencad enough to keep that

Office members of the Sociaty of pay, however; it is also tha inck

Computer staff believa tha be aupported in thair unofficial

offer (CW, July 26), worth bat- action by computer ataff

ween 18.5% and 19%, does not members of the Civil and Public

give them parity with the Servants Association and some

It then goes on, "CGE hos noted the new arrangements envisaged by the government for the development of CII-HB, and the conditions under which CGE is being asked to assume responsibility for this development vis-à-vis the Steta. After close study of these arrangesatisfactory and in line with the ments, the board of CGE has

Pascal compiler validating package AN extansive cube of programs for veildating Possal compilers is heing distributed by the Netlandel Physical Laboratory. Consisting of 283 separate programs, the package is comperable with the US language facilities were previously defined imprecularly to help implementars enviaue to conform to the current 881 draft standard for Pascal. According to Brian Wichman, co-suther of the suite with Arthur

clearing banks (CW, July 19) has now been removed following a support from NCR field engin-

bonus of 2.5% bockdated to July

i. Only one day of atrike ection

took place during the diaputo which has been handled by the

NCR workars et Dundee who

hava been ataging an overtime ban in a bid to win better pen-

sion tarms have threatened

atrike action whan they return

from holldny this month. It is

Pension pressure

banking union BIFU.

PO strikers ready to go it alone ready to buy. Compagnic des Machines tital hulds 53% of the shares in Cil-HB and Honeywell has the remainder. CGE and the French original offer of 8.5% to between 17.5% and 19.5% plua an minuni

request, it is impossible to be certain just what it is that CGE Is rejecting. It could be that the clectricol and electronic giant objects to CII-HB moving into markets such as office nutomation and banking which would bring it into direct conflict with CGE subsidiaries such as Trun-

sac and Sintra. If this is the case, CGE may well want to retain and even increuse its shareholding to try to influence CII-HB's expansion plans. Another possibility is that the government wnnis CGE to turn over its small systems and terminals companies to CII-HB.

A third possibility is that CGL is nuw prepared to sell all or part of its stake in Compagnie des Machines Bull, the halding company for the French sharm in CII-HB. If so, St Gabain is

led by ITS, a subsidiary of Sill the International inter-dan data networking organisation Mognuson ATC Was MIN late last year to sell M80 lot! air transport Industry but but government each holds 20% of Muchines Bull, and the dculing with the IBM co-munity in general because disremaining 60% is held by small level of damand (CW, July I

Bangkok Magnusons 3033 an H

Installed next year. By ther both

muchines will be field upgrad

able to their full power rating!

the moment M80s being din

ered are older, less powered

models because Magnusoni

holding off finalising the specifications of the Models &

and 13, which both outperfor

the 4341, until deliveres d.

113M machine start eafer

Maguasan ATC said the

sending a system swift

specialist in Bangkok tot

hased there parmanently. Ar.

year (CW, April 26).

series model? edder for iBM compatible Magnuson M80 mainframes outside WITH the likelihood that IBM North America has been pieced will replace the 3032 with a cutby the Bangkok Bank h lown version of the 3033 (CW. Thuiland. The order was placed July 19) US observers ore with Magnuson ATC, the UK seriously considering the based agency that coven possibility that far from being a Europe, the Middle East and Fr stop gap machine with a short lile, the 2033 could be an embryo The machines on order see

two M80 Model 43 machines, the 43 being the biggest processes currently offered by Maggusse It provides 30% more power than the IBM 4341 and, according to Magnuson ATC, the Bangot Bank selected 43s in preferent were the case, the performance to two IBM 3031s. The but of the 3033 would probably be currently operates two 370/10 enhanced to make It-the H2 One Model 43 will be delivered model, with the cut-down verto Bnigkok in late Septembe sion becoming HI. and the second machine will be

BGS grades

PROPOSALS to simplify the grading structure of the British Computer Society have been accepted by its council (CW, July 19) and are to be submitted tor approval by the memberahin at its annual meeting on October t2. Under the new plan, there will bethree professional grades of membership, Licentlotes heing merged into the Associate

Help for blind

ware maintenance will bear THE year-long evaluation of a Kurzweil Reading Machine for the blind (CW, March 30, 1978) is to be carded out at St Dunston's. London in conjunction with the Royal National Institute for the Blind The two institutes have jointly bought for £10,000 one of the first production models of the US machine and intend to train blind people to use it.

PD offer rejected

THE Post Office offer to staff in the Society of Public and Civil Semants has been rejected (CW. August 2) and the strike, which has been holding up the procea-ing of telephone bills, is to con-bine. The SPCS is seeking more han the 18% proposed and also wants a firm commitment on areer paths and regrading.

Report for DPP

gularities at the Pleasey ecommunications plant at He Lane, Liverpool, it has alleged that government his in the plant, which is a Gentre of System X develophent, have been misappro-

lame change

Epsrent company of Univue, erry Rand Corp, formally langed its name to Sperry Corp the Banual shareholdars

IL TP monitor

liar to ICL'a TP Option, is remodular, allowing it to be wilby was formerly director. Wilby was formerly director of Xerox's now defunct additional vanced research centre is Mil-

Versa Braille is that Braille notation can be taken silently, enabling a student to take characters at a time. It is planned to pince the first unit on notes during lectures. At the same time an audio recording of the lecture con be taken.

It is planned to pince the first unit on permonent loan at Hatfield Polytechnic

CW Ball will raise funds for Braille unit

where a blind computer science student, The VersuBraille, which weighs obout Anne Telford, has just successfully comeight pounds, incorporates a standard V24 pleted her first year. Interfoce and can be linked to any main-

frame to retrieve data. It is also posable to is intended to raise the bulk of this at the

Thursday, August 9, 1979

companies in the computer industry to don-Brallic is input by means of a keypad ond are the balance. at this year's Computer Weekly Bull. An the operator can check on the stored infor-

Price 18p

October 12. Tickets cost £17 each and in am. Companies wishing to book complete tables for 10 or 12 people should contact Chris Hipwell, Room 125, Dorset House,

Cost of a VersaBrallle unit is £3,500 and it

The year's Bell, which is once again under the patronage of the British Computer Society, will be held at the Royal Lancaster Hotel, Lancasier Gote, London, on Friday

a disastrous venture, which

neorly wrecked the company,

Menurex ploneered the

manufocture and insrketing of

BM-convertible processors with

its MRX 30 and 40 in the carly

choice as partner. The company discussed a similar arrangement

9 Turn to back page

Memurex is Amdahl's second

important feature of the equipment, the mation with a Braille nutstion rendout clude dinner, cabaret and dancing until 2

Stainford Street, London SEt 9LU. See

They say that several unused sockets in the 3033 processor could be there to accept plug-in modules to make up the distributed function architecture expected in the H-series. If this was the seate the series t

move ngainst BP did not have the desired effect, convinced observers that other British nalisation. ICL's business in South Africa would make It a prime target.
ICL Nigeria is fairly large by
Third World standards. It
employs 92 people and is already

Nigeria

at risk in Nigeria following the

nationalisation of BP's interests

there, is the small but fast-

Veiled hints from Nigeria's delegate to the Commonwealth conference Major-General

Henry Adefope, that Nigeria had "more tricks up its sleeve" if the

40% Nigerian-owned, ICL has sold shares in the company to lacal interests during the past 12 months to meet the requirements of the Nigerlan Enterprises Promotion Decree.

ICL had no comment on the possibility of nationalisation and was unable to say how many of its machines were installed in Nigeria, but last month it anonunced a El million order for two 2904s from the Nigerlan National Petroleum Corp (CWI,

IBM year late with System 38 IN what should prove a windfall tem 38 is largeted, and the 2905 that IBM has found that the

The merger move was leieshadowed by Dr Gene Anidehtin e CW Interview to 1977 [December 6).

"Il there were a shortage of com-

IBM hes run into serious problems on the System 38 database computer for small business applications and will not now begin first shipments until mid-1980, almost n year late.

The reason given is that more time is needed to integrate and test the advanced programming technology in System 38 to meet plannad performance levels.

The problems present a golden opportunity for ICL to capitalise on IBM's misfortunes with the naw 2905, not only in tha UK but particularly on the Continent, where IBM has a much bigger System 3 base. The 290X aeriaa has been con-

sistently successful in the Sys-

any time to bring its holding up 3705, and mugnetic media. The merger would take to 32%, tf the warrants ere not Leeds confirms order

merger talks

the merged company would be

For the first half of 1979,

cumpany does at least us well in

the second holf, the merged

company would have a firmover

Edgital Equipment Corp. CH-HB of France and Britain's ICL In

the length of major computer

Anidalil has hitherto special-

ised in large-scale general pur-

pose IBM compatible CPUs

covering the 370/168 to beyond

the 3033. Memorex munufac-

tures and markets IBM-

compatible disc drives, tape

drives and 3270-type terminals.

It also makes a communications

processor alternative to the IBM

This would place it just hehind

of just over \$1,000 million.

systems companies.

CONFIRMING its order for an Amdshi 470V/8 se the hest for its time choring network (CW, August 2), Laods University has announced that it is evaluating the Michigan Torminal System, as an alternative operating system to ISM's VM/CM5.

IBM has yet faced in the large systems murket. If the talks million and Memorex \$359.2 prove successful, Amduli-would million, Assuming that each

Number 665

able unit which can provide word processing and Braille notation facilities, will be raised Braille is input

operating system to ISM's VM/CM5.

MTS was originally developed in the lete 1880e at the University of Michigen on an ISM 380/87 and now runs there en an Amdéhi 470V/7, it less size been running at Newcastle University since 1986, first on a 360/87 and now on a 370/168.

The Leeds network will use the X25 protocol and will have sets minicomputers, each accessible by any terminal in the network.

POLICE report has been sant the Director of Public Prose-tions about alleged financial \$20m suit names itel

FOLLOWING Itel's auit against Inaurance involved trucks end its insurance broker and the Americas Insurance Co of New Orlaans (CW. August 2), nina Europaen insurance companies are now auing the same defen-dants, plus Itel and its egents, for \$20 million.

between Aindehl Corp and

peripherals specialist Memorex

to create the flercest competitor

ake over Memorex by issning

1.2 Amdahl shares for each

Memorex share. With shout 8

milliun Amdahl and ubout 17

million Memorex shares on

Issue, this would leave Amdahl

stockholders with almost 64% of

the new Amdahl-Memorex

company, Initlal murket reac-

tion was that the proposed share

exchange seriously undervalued

Fujitsu of Japan, which sup-

plies components and assem-

blies to Anidahl, and tape drives

and some disc drives to

Memorex, has about 27% of

Amdohi at present, and war-

rants which can be exercised at

The companies, which are all-In the re-insurance business in London, compiain that they had no idea they ware re-inauring computer leases. They say they were led to believe that the re-

L Dalaskil is reported to have on the Conched a VME/B TP monitor milet Darts, which, although of the NEB's office systems firm

Itel is mystlfied at being named in the sult, saying that it was not involved in the ra-Insurance contracts.

been aspected to announce a loss of at least \$20 million for the ascond quarter (CW, July 26), now says it estimates after tax losses for the pariod will be

manager of new product deveiopment for STC in Harlow At
Newoon he will be in overall
charge of the design of the integrated architecture for price
systems that is life company a
long term are

tem 3 market, at which tha Sys-

rocus an midsummer bugit Pay es you use scheme Downtime by Ched Latters to the Aditor 93,500m credit for IBM Michie on a success story freditantment Notes rogrammer Notes Software File

Puzzier

Op Root on the job market
filero Nesse

Paople and Cverte

Irist lax selventages
Introduction to Reseal

Computers in banking

Herobatt as fingerbriots

Andest as destanting Sit.

for its competitors, notably ICL. Uses the proven hardware of the complex operating system on 2950, and features an improved operating system and both the full and the easy-to-use versions lended. The new 64K-bit chip is of the IDMS dotabase manage- used in the System 38 control ment system.

Hash Wiener writes from New York. The reason for the delay is

System 38 regulres mony more Instructions than hud been in store and becouse it is a compa-

The Intertel range of data communications equipment was the first to be based on the same principles as the systems it's designed to support. In other words a true systems approach from modems to powerful network controllers.

Network Control Systems. The most advanced in the world. Single site capability for: network and terminal diagnosis, rerouting and reconfiguration.

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Announcement on split soon COMPUTER HOUSE 49-53 Beliegrove Road Walling Kent DA16 3PB IN the annual report of the Post Office Corp, the chairman, Sir Telex 896138 William Barlow, reaffirms aupport for the Carter Committee Tel: No. 01-304 8326 proposal favouring a aplit between poatal and telecommunication CRANFIELO is a company allering a TOTAL range at supplies to the operations. The report showed telecommunications had a record OUR RANGE OF PRODUCTS INCLUDES TO PRINT OUT SINDERS COMPUTER LISTING PAPER PRE-PRINTED COMPUTER FORMS TERMINAL ROLLS AND CONSOLE PAPER TAPE AND ACCESSORIES TORMS HANDLING EQUIPMENT TABULABELS CICOMPUTER ROOM FURNITURE MAGNETIC MEDIA AND FIRE PROTECTION EQUIPMENT ACCESSORIES COMAGNETIC TAPE AND DISC/ CLEANER/CERTIFIER FOR DATA REGORDS CICOMPUTER CASINETS FOR DYALUABLE MEDIA TELEPPY DISCS It is impossible to list our complete product range which covers Att, requirements Should VOUR requirements not be manifeled cented us, and we will be pleased to give every assistance. We till or any QUALITY products with PROMPT delivery at a competitive price

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Note. Under e merketing egreament belween CALLIdam HPAC Ltd elfective July 1 HPAC compilers for Compiler Automation's computers will be marketed by HPAC to F750 each inclusive of £750 each inclusive of maintenance. For further information please contact:

Mrs. E. Vincenti HPAC LIMITED Cherwell House

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CONTENTS

Meanwhile Itel, which had

Wilby joins Nexos board

PAGES 19747

Communications Products Division 29 Marylebone Road London NVI A terilifal demodor

processing managers ore an ex-

tremely responsible and pro-

fessional bunch, the survey on

data processing managers sny

licensing would be a more effec-

live means of control than the

Dats Protaction Committee's preference, registration; 85% feel spot checks from an externel

authority should be introduced;

76% feel that computer staff

could have problems of divided

loyalty if their managers tell

them to do things which they

believe are contrary to a dats

protection code of prectice; 49%

pelleve dota protection Isws will

put a serlous burden on

management; and 62% feel the

proposed £26 registration fee for

each application suite to be rea-

So much for statistics. Behind

them lies a willingneaa to accept

and adapt to date protection

laws if they are introduced. And,

perhaps aurprisingly, there

emerges from the statistics and

commenta the vlaw that the

proposed lawa are not strong

More than half of those sur-

veyed opted for licensing, s

stronger form of control then

registration. One comment was,

"With registration tha control

would be essentially a negative

one which would have leas

chance of gaining acceptance

In betwacn setting-up lost

of a Presidental Chair to grace

its distinguished council room.

reported comments concerning

the value, or otherwise, of DP

heavy assault.

DP boat.

management heve come under

It does seem rather unfair to

blamc DP managera for much of

the Ills of the computer industry.
However, the NCC does seem

Further North, the bug seems

privilege by the Institute of Data Processing Management (CW)

Vol. 27 No. 665 Thursdey, August 8, 1979

John Kevenegh 01-261 603 Deputy Editor Tony Higgins 01-261 2691

Advortisoment Manager Herry Hufson 01-261 6358 01-281 8503

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Computer Westly has a circulation each week of aver 62,000 tecluding the high-est fully requested circulation in the UK The leternational addition, which is

and credibility. Computer Weekly is sent from of charge to the lotowing categories in the US and the only Company acceleries, company acceleries, namegoment services are cultives, they can have company acceleries. An overwhelming majority also sold spot checks would he manigorina i servicas asakulivis, Tikif asosta resposatilo loi cestilo manigorinani/gompata consultati, lactu and tipchers. QP Sameger/aupavisors, hama salvigat O&O (libera, puografiora, operatora, computer aniannes, lio ti se timo needed. One respondent soid, "Self-registrotion ia a nonstarter as far as effectiveness is concerned." Another said. "The spot check, if backed by hard

Controlled eirculation department; IPC Besinets Place (Sales and Distribution) Ltd. 40 Sowling Street Lyre, London, 2515 CMS. 161 C-8-27 SOMS. Subscriptions for nadore suiteful file 28-0% extraportant UK 216. UK students 15, currences 252, currences students students S. 252, currences students cludents S. 252, currences students students S. 252, currences Students S. 252, currences for Students S. 252, currents for the Students S. 252, currents for the Students S. 252, currents S. 252, currents

ISSN 0010-47B7

some form of midsumner bug is

convince us that they have no

august British Computer

Society. A recent addition to the

ever escalating list of Irrclevant

working parties is a Vel advisory

group. Just the place, presumably, to take your troublesome

Even more strangety, a task

nattle lincs ore drawn up.

equal in the rendom nonsense

JUST why the sundry organisa- academic exams - while prob-

tions responsible for the welfare, ably even fewer would pass. In

destiny and often fortune ui the any event, the IDPM would

computer industry have bean appear to be catering for this

hard to define. Ench appears to causes, the BCS has announced,

be going to grent lengths to with much rellsh, the acquisition

First in the compile run is the to have bitten the NCC. Its

force has been created to com- to be hadging ita options by

bat declining membership. The appointing an expert on IBM to

selected target is opparently the an advisory committee. Its first

DP manager; but this venture advice should be to ask the NCC

seems doomed even before the management to stop rocking the

GOVERNMENT COMPUTING

MINISTRY OF DEFENCE

A 14 Keystation Processor Controlled Kaying Systam, producing ICL. 1900 and 2900 compatible magnetic tapas [9-track PE 1600 bpt and 7-trock NRZI 556 bpt) with the ability to produce printed output and processor in controlling work at both processor in the processor of the processor in the processor of the proce

knystation and supervisor levals, is required for installation by February

Applications for copies of the Summary of Operational Requirements should be made quetting reference CEH/87, to:

CENTRAL COMPUTER AGENCY Riverwelk Hause (Room \$22) 187-181 Millbank, London SW1P 4RT

struck simultaneously with psrtlculnr market.

Professional Processing Management (CW, July 26) provides It.

The bald statistics emerging from the survey are that 53% of data processing managers say at the control of the control o to privacy

cessing managers emerged. Typical comments were, "Msnagers must learn to live with it," "Management cannot expect to avoid this burden," and, "Management exista to carry such serious burdans."

These comments ahowed a commendable sense of responsibility among managers, especially when considered with the costs they expected to incur in Implementing the lawa. For 69% sald their organisation would be affected by the laws, and eatlmatea of how long it might take to amend aystema to cater for the laws went up to five years in some cases, although most respondenta felt it was

impossible to eatimate. And of the 62% who said the £26 application regiatretion fee waa reasonable, many pointed out that it was a trivial sum compared with, aay, the cost of maintaining the aystem.

On a related matter, 72% felt it would be possible to give individuals access to personal information held on them. although some respondents said the costs would be astronomical; but 73% did not think it feasible to get the conaant from each individual every time data about him or har was put to new use.

with next year's technology

probably being available this

year, therafore an ever higher

degree of ability and skills will

be danianded from the DP

present with the increasing use

of DP installation teams os a

penaltiea, will keep all on their One problem identified by the survey was that of conflict bet-On the question of whether legislation would be a serious ween staff and managers if the atuff felt they were being asked burden, the comments were to contravene any code of pracmore revealing than the statistice which could be introduced. tics. it was here especially that Three-quarters of tha responhe professionalism and resdents thought there would be n ponsible attitudes of data pro-

... on a midsummer bug

Most of the suggestions were on the linea of, "Take advice from a professional hody, "Refuse in writing, sending a copy to the Data Protection Authority, a professional body and the local MP," and even "Stand up and be counted." One respondent suggested there ahould be an official form an employee could use to advise the employer that the code was being contravenad. A copy would be sant to a professional body and the person would be Immuna from prosecution by the

All these statistics end comments ara extremely Important If date protection laws ore going to be introduced - and be auccessful. For they are the views of the very people who are going to be making sure their organisations atay in line

It is heartening that computing people are adopting such poeitive attitudes towards data protection, but the authorities must be seen to be equally profesalonal in drawing up and on-forcing the laws, otherwise they will not gat the respect of the computing community.

This last point is amply illustrated by the outspoken response to the Data Protection Committec's recommendation thu one of the cight to 12 members of the Dota Protection Authority board should be a data processing specialist. Some 90% of res-

negotietions. One result of the

present problems could well be

cessing systems.

nn increase in distributed pro-

Spreading the load could

reduce the vulnerability which

computing operations. Or per-

haps the BCS could divert n sur-

Tenyears NCC to

software

study micro

TWO projects to study the soft-ware available for microproces-

sors have been set up by the

National Computing Centre.

One will concentrate on the

high-level languages evailable.

The other will examine applica-

tion packages, with particular

emphasis on the support pro-

will also consider the veralons of

the languaga available and the

covering the aoftware and sup-

port thay provide. Suppliers

wishing to be included should

contact Lyndon Morgan, the

mlcroproceaaor development team leader, at the NCC in

The NCC la also keen to hear

COMPUTER WEEKLY **AUGUST 7, 1969**

IN a surprise move, IBM nounced that sohwers for him new System 3 miniponymen report by the Netland Condi-for Educational Technologi urged that £2 million of petal hought to be the foreness i

pondents said that one com-

puting specialist was not en-

ough. Comments Included, "They must be joking," and,

"Any one DP expert is only an expert in one field of DP. And

the responsibility would be ton

seriously by the Data Protection

Authurity if it is to have any

credence in the industry. For if

that credence is missing the sur-

vey showed that, despite the

evident professionalism and res-

ponsibility of duta prucesslog

mnnagers, if they do not respect

the lows and the regulatory

hody, they will find ways around

the law. Over 60% felt that the

legislation proposals would not

catch those deliberately con-

cesling information about their

warned, it is now up to you.

lazelino

digital

Pericom

TELETYPE

Qume

digital

Deta Protection Authority, be

This response must be noted

great for one man."

THIS week's example of the stronge things people say in the me about computers was sent in by N. P. Hawkins of York University Department of Computer Science, who wins £5.

Texas Instruments Range of Printers

HAZELTINE VDU Range

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from users who have experience relevant to the studies, whose Designer Mr John Shields is hooding a team of researcher, which collaboration with acionticts of York University, expending is: results will eventually be made syalishe in NCC publications. principles to produce instruments of repid energy it for grain milwig. other foodstuffs... Mr Shields' oxperts include blockenium micro-processors from both eldes of the Atlantic.

From £55

From £1625

From £1285

From £795

From £1985

LS1-II and PDP 11/03

Black Box packages **TERMINALS**

A VARIETY of application packages has been launched by Rair for Its Black Box microcomputer. High on the list are sales, purchase, and payroll systems developed by Groffcom Microprocessor Group.
Rair hos also introduced a

stock control system - the first ol an integrated rauge planned by Allan Data Systems. It will be joined by packages for blil of materials and sales order pro-

Also available on the Black Rox is an estote agents package. marketed by its developer. Sword Data Systems.

Mark 7 library

EIGHTY-TWO new routines, mainly in the sreas of linear algebrs and ordinsry and partial lierential equations, ere included in the latest release of the NAG Foriran ilbrary, Mark 7. The Mark 7 library is already available on IBM 360/370, CDC 3000, Cyber, and 7600, Burroughs 6700, and ICL 1806 equipment. Its Implementation on about another 30 mainframes is under way.

Broadcasts on chips

Mighty Micro will cover the documentaries on the silicon chip is to be screened by ATV September, while Piccadilly Radio In Manchester has started a series of four broadcasta about

the silicon chip industry. willen, and will be presented man. It will include interviews by, Dr Chris Evans Starling on September 3, the kins and other experts.

Apple Dealers' Association

FOLLOWING its hurrled form allon at the time of the change in UK dealership initiated by Apple puters, (CW, July 5) the UK Applo Dealers' Association has now been formally inaugurated with full backing from the

Cupertino, California, micro-

Over 50 Apple dealers attended the first meeting last week to ratify the association's objectives, and haar of Appla's

30 ST. JOHN'S ROAD TUNERIDOE WALLE (0892) 3988 t

OIGITAL MICROBYSTEMS DSC-2 LOW COST COMPUTER SYSTEM INCORPORATES: GABY1E of Roppy disk storage on two single sized 8" drives — steads
S of Main Methory standard — S2K and 48K elso systlikbis
NK 03 standard a TEXF PROCESSING BASIC COSCL FOR TRANSMISS. BABLE & Add on Hard Olsk Streets - Up to 28 Magel SOUND ARE LOCKING FOR DEALERS & DISTRIBUTORS

Royal flush of rain as Charles opens laboratory Secause the Science Perk was the Idaa of Trinity College, Cambridge, the sims mater of HRH, vast horder of Trinity por-

Accelerator will be available in

December.

Also available. The following 700 Series Matrix Printers:

£865

£1022

£1241

£1494

British oe it did when Cambridgo Consultants opaned its new establishment on the Cambridge Science Perk.

Lovingly referred to os the Milton Hilton, one were invited to the shir The weather, no respecter even of royal personages, did the obvious thing for such on occosion and organised o large and

on occosion and organised o large end accurately timed downpour.

This left CCL with a hurried fell-back on to "Pian 9," holding the opening coremony in on adjacent merquee. Not only wes it adjacent to the front door, but elso the point where Prince Charles was due to orrivo — by heliconter.

by helicopter.

The multitide tried to squeazo into the

dignity and panic that only true grits can affect. All wonted to be near the front, where HE would be.

Whan the Prince arrived, the proximity of the merques to the helicopter landing point caused a moment or two of panic among those at the back. Helicaptem produce a vest amount of moving air, and most seemed to be trying to domolleh the mar-

The one Trinity person to come out of the ceremony with dignity was the Prince himself. As for as could be seen, he olbowed nobody out of the wey, end trad on not a single too.

of the technology involved in the opening ceremony, discovering a new royal growth industry along the way.

"I am eaked to perform many opening coremonias," he sold, "and this mothod

will now sliow me to send tepe recording: to those that I connot porsonally attend."
He was also owore that these apacch recognition eyatoms ero supposed to be very discriminatory. He saked CCL managing director Richard Curling to apoal the actual "oponing" words first, and owelled the response with some interest. To Cutting's relief, the door stoyed

The language project will look st the characteristica of various languages and their suitability for particular applications. It will also consider the versions of the language available and the way they are being marketed. In support of the studies, the NCC is distributing e questionnaire to over 800 auppliers to the studies and the studies are to the studies and the studies are to the studies are the studies a

by a much higher demand for

leasea then the company pian-

ned. It costs \$370,000 less than a

between 75 and 80% of the

470V/7 in the US end provides

Minimum configuration in-

A DERATED version of the outright purchase, since cludes 4 Megebytes and 12 470V/7 mainframe, called the Amdahl's business has been hit channels: It can be field V/7A, plus an attractive option for users of this machine and of the 470V/5 have been an-

etc — e saying never more true then when the Sritish weether strikes agoinst the

CCL's palece was to be opened by no less than the Prince of Wales. The ossembled

dignitaries and profes were schoduled to be standing in the open air to witness the

stending in the open air to without the event, the high spet of which west to be the Prince acyling: "I declare this building open" into a speech recognition system (Apple II microcomputer with speech recognition board from Heuristics) at which

nounced by Amdahl. The new option introduces the concept of usage pricing to hardware. This means that users can upgrade thair 470V/5s to e V/6 and their V/7As to a V/7, but only pay for the additional power when they use it.

The option, celled 470/ Accelerator, has a number of attrections for Amdehl as well as its customers. It is available on rental only, so generating additional revenue from sold machines, and It gives Amdahl a strong selling argument against used 370/168s, which are cheaper than 470V/5s in the US.

No Europenn prices have been announced, but in the US the Accelerator package rents for \$1,800 a month, which allows 20 hours' usage. After that the usage charge is \$90 an hour.
If it is used for more than 50 to

60 hours a month, it becomes heaper to pay for n permanent field upgrade to a 470V/U. The performance improvement is between 40 and 50% and the Accelerator is octivated by a single command at the operator console which simultaneously causes a meter to record the time that the CPU is active in the

enhanced mode. No alterations to software are needed, and the adoptation is done within the existing cabinet. Typical occasions when it might be used are end of month runs, unexpected overloads and back-

The new 470V/7A implements a similar derating of the V/7 processor as waa applied to develop the V/5 from the V/6. It

A SERIES of six half-hour

technological devalopments in microelectronica and will concentrate on the optimistic side of thia Industrial revolution. The Piccadilly Radio series,

The ATV series has been tures the atation's Marion Bowwith ASTMS leader Clive Jen-

cdmputer manufacturer.

support plans.



Model 779

Model 700

Model 701

Model 702

by government economies

ondon to the regions

Home Office computer centre,

upgraded through the 470V/7 to the Property Servicea Agency, and the Department of the En-First deliveries of the 470V/7A vironment, and will either be and the V/5 Accelerator are set taken up by the present London for September. The 470V/7A staff or filled locally.

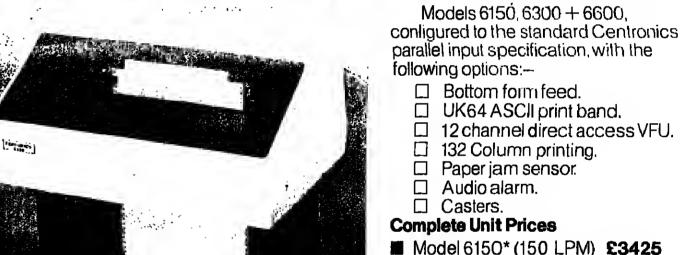
Service jobs had been ear-

The 250 jobs will be in the Peach ungrades

THE bureou operations of Peoch Deta Services, Burton-on-Trent, are being trensferred from o Digital Equipment PDP-8 to o PDP-11/34 installed in the com-Originally, about 30,000 Civil pany's new offices et IBI Horn-

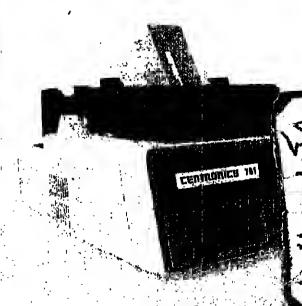
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Proposela must be received by 12 Septembres 379

MINISTRY OF DEFENCE

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union lever in compony plus task force to the rascue?

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ior order processing to be supplied on a turnkey best british Army in West Garmany Installation of live system than September 1000 than Saptamber 1980.

Applications for Operational Requirements, queling in applications for Operational Requiremental abundance of the publication of the publicatio

Banks find \$1,500m

Foot slog-1

computing are going unappreciated by the general pubic, take a look at this letter that appeared in the Eastern Evening News, Norwich: I think £8 million for a weather

forecast computer is utterly scandalous when there are so many serious disenses that have to rely on voluntary gifts just for research purposes... There are surely enough people with corns and burnons which do the job of weather reports

just us welt and ore cheap. (Mrs) D. LANE Foot slog-2

HERE'S dedication for you. A teacher from Horwich, near Bolton, is going on a one-mur sponsored walk from Land's End to John O'Groots to raise the money to buy a microcomputer for St Joseph's RC School where he teaches. John Deady is his name, and all I can say is, more power to your blistered feet, John.

I'm sure my employers would be delighted if I went on a sponsored walk to raise money for a new typewriter Still, teaching in these days of flailing Chancellor's axes calls for an extra special vocation.



"Wa'lt just leeve tham

Graffito

HO hum, It's the conference senson again, and as I sit Hirough lecture after lecture 1 ponder on how few are orginul, stimulating, and nonobvious, and how many nremone of these. It brings to mind that graffito that understand (second-hand) to be seen on the walls o more and more high-class ladies' loos, and that I am beginning to think is a very upt motto for the late Sevenlles "You have to kiss on awful lot of frogs to find one

Texas 810

LETTERS TO THE EDITOR

Prestel leads the world by the nose

Butler, in his letter to you (Let-ters, July 12), that France and the UK are becoming the laughing stock of the viewdata world. We have always felt that there was not enough laughter in computer services, and fun ia one of the secret ingredients in Prestel's success — witness more than 100 games, jokes and puzzles aireody on the system. say, Butler Cox and Partners.

But seriously, while I can anderstand David Butler's desire for a grand Anglo-French alliance to develop and market viewdata on a worldwide basis, I do think he is on the wrong tack,

Viewdata is one of a long and distinguished series of brilliant technical inventions that have been produced in this country. Too often in the past such inventions have languished for lack of energetic commercial exploitation, and have had to go overseas to be properly appreclated. The Post Office is determined that this sholl not happen to viewdata.

This country has the skills resources, and imagination to exploit viewdntu effectively,

team which specified and pro-

package which was designed.

written and sold by Tom Bar-

nard in 1966-67 and which is still

in use alongside FTL6. Because

of a mutual interest in the use of

Decision Tables as a program-

IT was good to hear from David provided that the project is pushed forward now, in u hold blems, and they are doing so. and enterprising spirit. This we are doing. We are years nhead of the rest of the world, and have already sold our technology to West Germany, the Netherlands, Switzerland, and the US. We have created in Prestel n whole new industry in the UK. providing business for handreds of firms, including, I am glad to

> Of course we must move towards common technicol standards for the various national viewdata services. And we are working intensively not only with the French, but with mony other countries, towards this end. But the task is not as simple as David Butler auggests. In the early days of a new service there will be room for different, and genuinely held, points of view on

the right technical solution. And since Prestel, Ceefax and Oracle have become firmly established as going commercial services, we must obviously seek to achieve international stundards which are "downwurd compatible" with these existing

NCC and the Filetab story

But please don't suggest that Prestel should become bogged down in grand inter-governmentol ventures, It would he the kiss of death. Wc have moved from the decision to proceed with Prestel (February 1978) to the opening of an admittedly limited public service (March 1979) nt about three times the speed of intergovernmental projects such as Euronet. And grand lutergovernmental ventures have a nasty habit of losing touch with the marketplace (of Concorde).

Prestel is an example of Britain leading the world, not only in invention, but also in commercial exploitation. If the Americans David Butler meets find this funny, they must have a peculiar sense of humour. The Americans I meet are amazed (and frankly a bit cmbarrassed) to find poor old Britoin leading them by the nose into the information society.

> Dr ALEX REID **Director of Prestcl**

Control Theory MAY I applaud Tom Gilb's dc- decide on methods a monitoring the output to fell scription of the wny in which he goals out what corrections should,

for school work

who replied to my request for

help and advice on computing it

schools (Letters, July 5), I have

received much useful data on

microprocessors and udals for

use in the school whore I teach.

and advice on useful publica-

tions and organisations. I ant

I would like to use the col-

mins of Computer Weekly once

mure. I wish to tride sources of

two Items of equipment sugg-

(a) slow, small card readers

capable of being linked to

(b) a curd punch other than

the older button type or the 029

very gniteful.

ested to mc

I WOULD like to thank all those It had a dial on the side to

specifies maintainnbility, and monitors the attainment of these goals? At the same time, I do hope that his readers will reolise that this is only one area among many where the specification of goals und monitoring methods would lead to more satisfactory com-

Readers

thanked

MAY I, through your columns thank Computer Weekly and of

your readors who responded to our appeal for a Braille online

terminol (CW, July 5)? As a

rasult of thair halp, and rise the genorous offers of Rolls-Rayco ot Bristol and the Cambridge

University Computing Service our students will have interact

I. R. MecCALLUM

A place for

Seniut loctore

tive eccess next yeer.

Essex University

Dept of Computer Science.

Control Theory has been accepted for decades in many eugineering applications, and surely has some use in the "soft" parts of computer systems design. Perhaps one could do a top-down design using a mellio-dology such as Michael Jackson's. For each process on the structure chart, input and out-

Ble LINANIE Le Computir Polytechnic of the South Best London SEI CAA.

the character to punchand

and a lever to cause the 30

churacter to be punched:

printed. This punch workinghly suitable for us to Ge

rald cards in a batch quick

it is still being produced.

Finally I would be plere

rurrespond with any hel;

PDP-11/34 user, espe

mon: convenient me

11/34 System.

79 Lanwood Road,

editention. I would like

running Fortrae and Ma

programs than the method

currently have to use vitting

teletypo linked to a a education.

M. G. PAUL HUTCHING

Fair

comment?

Would not a more useful

M.TXT The source shall beg.

sufficient clarity that commer?

are necessary on less than 184,

By "output", I mean fa,

example a valid record from.

data-vet, an updated vericat;

the file, a continuous response:

queries on a database, the

satisfaction with the come

system. These are at differ

levels of one top-down her

archy, viz the theoreticalny-

design. But systems, and pom

them, can be tooked at to-

ding to other types of gont

Which "instintainability"icon

The major difficulty ad

this would appear to be theti

of sultable methodologies

Dr A. N. WALEH

pecification be

the lines on avg?

Dept of Mathematics, Nottingliam University.

system and pershaded NCC to muchines and Bob contacted inc duced the filetah system and I put are specified. This is, of enter the field of software proat NCC when by bearned that a must put the reseal straight course, the deared output, or regarding the development of version was being developed for duction, a decision which has goal. The final stage would be to this package, for I fear J. E. C. heen beneficial to the computing the IBM 360 series. community and NCC. Cartweight's memory is nt fault Becouse we could not give (Letters, July 5). Filetah is based on the NITA More help sought Once it was successfully estnpriority to Robinson's require-

joined me at NCC early in 1968 ever, Filetah was already avail-

he and I specified the Filetah able and being sold for ICL 1900

ments, Bob commissioned a software house to produce a tailor-made package. I wonder what happened to it?

Mrs M. PHILLIPS Warrington,

Amateurs seek computer site

blished, many people have

clnimed some involvement in

the design of Filetab. Certainly.

in the later 1960s Bob Johnson

and his team at E. A. and S.

Robinson in Bristol produced in

specification for a parameter-

driven reporting package. How-

THE Southampton Amuteur an IBM 360/40 and we have nccepted the offer. The computer is now in storage, as we are not yet able to run it due to lack of a suitable site. We need a large building, say 20ft x 12ft with a solid floor and threephase electricity. The running cost will be much lower. £500. than our earlier estimate of £5,000, and we are hoping that we will be able to raise most

Teletype 43

of this cost by charging our more to the needs of ial Computer Club has been offered inembars "ut cost," and by Ilmited sponsorship.

We are setting up a special to investigate further details of the project, with o vugne idea of building, Bussett Crescent East,

The Soton ACC is now just over a year old and we are fairly well known throughout the UK. Southampton, We are beginning to adapt Hants SO2 IHP.

Lear Slegier ADM 3A

sub-committee within our club perhaps putting the computer to University of Suuthampton, nt some community use, apart 7.30pm. from members' own projects.

members, and we organise local tolks of general interest. We incet on the first Wednesday of each month, resturting in October, at the Medical Sciences

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Lear Siegler ADM3A/Tektronia Oraphics

I remember some yours ago seeing literature on a punch that could handle one card at a time. Mid-Glam CF37 2EP.

telctype lines, and

keyboard type.

July 19), does not go far enough in stressing the true significance of SME (Simulated Machine En-

with such a narrow field as conversion; rather it is about octive transition from u 1900 (or

Finally, the relationship Finally, the relationship ween SME and shared like that the latter by the former to be adopted the former to be adopted provides a growth path for which are already at or new top end of the 1900 must be top end of the 1900 must building an image of the VME user interface (hence "Simuloted") within a 1900 environordination of previously freestanding products, for programs. and data conversion, into an

The benefits of this approach po Box 24 por that all new work can be refulled the written to 2900 standards in a result of the standards in the standards in a result of the standards in the standards form which can be run undar Bristo BSed

DHSS in moves to automate benefits IN "Gilb's Mythodology" (Cr. July 5), Figure I contains at

Mechanisation of Local Office

Tasks, is a development of an

idea which was being pursued at

that time. This involved instal-

ling local computers to serve one

or more payment offica. The

plan now is to put one twin

the 12 regions.

2.500 VDUs.

one year later.

Over 200 line up for

Computastars finals

THE line-up is now complete for the finals of Compulastars to be held at Crystal Palace on Satur-

computer aystem into each of

The contract wos o good one

placed after an open tender in

which a large number of com

the protection of the single

tender policy.
The pilot involves two twin

2950 inatallations, but if suc-

cessful it will be applied throughout the I2 DHSS re-

gions, and require a total of 26 2950s, 28 CR80 front end proces-

sors from Chriatlan Roysing of

Denmark, and 500 7S02 cluster

terminal systems with a total of

The pilot project involves in-stallation of one twin 2950 in-

stallation in Reading for delivery

second. In Bath for the live trial.

It is planned that the Bath

system will serve five local

offices equipped with 7502s, but

It will have to be able to simulate

operation with 226 terminals

The system in Reading will be

used for software development.

Underlining the venerable an-

cestry of the project, the

operating system to be used is

not VME/K hut DME. There nre

South Thames: Commercial

Union, Easams, Legal & General, National Provident and London

Borough of Lambelli.
South West: EMI, Rank Toshibi

LADIES

East Angilo: Norwich Union, Pro-vident Mutuol and Thomas Cook.

Midlands: Data Sciences, Peterbo-

rough Data Processing, Thorn Elec-

North East: Midtand Bank Dpara-lions, Provident Management Services, Rowntree Mackintosh 1 and

towntree Mackintoshill.

North Thames: Casa, Lota, Lonon Transport 1 and London Trans-

North West: British Nucleor Fuels,

Livarpool Dally Post and Echo. Midland Sank (NWCC) and Wool-

worths.
South Thames: Commercial Union, Legal & Ganeral t, Legal & General It, London University and

Segas. South West: EMI i, EMi ti and

and Westland Helicopters.

at the end of the year, and i

Sample of a design specificate M.TXT Comments shall be as for at lenst 30% of source lieur. automating payments of incapacity and supplementary ben-efits, for which ICL has been awarded the pilot system con-tract (CW, August 2), is the latest in a long line of attempts by the Department of Health and Social Security to automate these applications.

Incapacity benafit is believed to be the new euphemism for for ICL to win, aince it was sickness benefit. Attempts to automate auch paymants were panies competed, and Indicates made and discontinuad fiva that ICL is able to win public years ago (CW, August 15, 1974). sector contracta even without

Security worries

WORRIED shout security, the US Tressury le taking its pay-ments system, which transfers \$10,000 militon weekly to more then 100 government egencies, oif a Honeywell 5080 main-frame, and building a dedicated system using a duel Tandem configuration. For added ecurity it to to be installed in

The Federal Treesury has been concerned for some time that, because of the variety of applications running on the Honeywell machine, it is diffi-Honeywell machine, it is diffi-cult to central the number of people who could have socess to the Tressury Financial Com-munications System.

Designed for ultre reliable working, the Tandem NonStop 18 computer systems are sold with a minimum of two processors.

the finals of Compulastars to be held at Crystal Palace on Satur-

More than 200 computer

people will be entering in a

arlety of both team and in-

Supporters are welcome, and

advance tickets cost 80p per

adult and 30p per child and can

be obtained by filling in the form

below. Entrance charges on the day will be 80p and 40p reapec-

MEN

East Anglia: Thomas Cook, British ited, Norwich Union and J. H.

Midiands: Scicon, Data Sciences.

Peterborough Data Processing and Thom Electrical.

North East: Compower, Empire Stores, Rowntree Mackintosh t, Rowntree Mackintosh II and Rowntree Mackintosh III.

dividual events, details of which will be released on the day.

day, September 29.

tively. Teams are: -

Reading, ond software which expected to form the baala of

not to go ahead with the ayatem will be taken in 1981 or 1982 following evaluation of the pilot system in Bath. The machines in Reading would then be used to collect data from the 12 regional officea for statistics.

The decision on whether or

Racal-Milgo third in survey

UK owned Recal-Milgo ranks third in size by turnover in the Top 60 data communication manufacturers in the UB, accor

manufacturers in the US, according to a survey published by the US magazine Datamation.
If the figure is combined with Racal-Vadic, ranked 18th in the listing with a 1878 turnover of \$12 million, then Racal's 1878 turnover of \$75 million is second only to IBM with \$144 million from data communications. This represents less than one per cent of IBM total turnover on all according to the turnover of IBM total turnover on all pro

credit for that demond for this is way beyond the company's expecta-The last product for which

IBM seriously underestimated demand was the 3030 series.

Following the problems created

by that, T. C. Papes, who headed

the systems products division which has ainco been split into

two, was transferred to an ad-

IBM's borrowing requirement haa been met by 37 banka only three weeks after the company announced that it was seeking linea of credit totalling \$1,500 million (CW, July 19).

It is the first time for I2 years that IBM haa been unable to finance its future business out of Ita own resourcea. The company has not sald what It needs the money for, but it is thought to be needed for expansion of production facilities for new products, notably the 4300.

There are strong Indicationa

ICL 'war' with Honeywell Bull hots up embraces the 370 series up to the

However, CII-Honeywell Bull's lataat half-year to Mnrch 31. figurea showa its turnover up 20.5% at FF 2.220 Cil-HB deplores comparisons of this kind, conmillion; growth last yaar was a much more modeat

year it was FF 137.5 million.

THE unofficial contest between ICL of the UK and cli-Honeywell Bull to become the largast franc. As a result, at the present rate of exchange, European-controlled computer group is hotting its turnover translates to £230 million and its profit up. Last year, CII-HB was just ahaad, but was growing at a much slower rate than ICL million and profits of £18.6 million for the half year

tending that exchange rate fluctuations make 12% or so.

Profita were ahead 26% at FF 39.8 million.

French government ald to CII-HB in the first half ones available, and are used by the compilers of totalled FF 80.4 million; in the same period last league tables of the world's manufacturers. ICL prefers to ignore CII-HB, regarding the 47% US-CII-HB is, however, handicapped in the race this owned company as not truly European.

ministrative position. The men in the hot agats this llme round are senior vicepresident Paul Rizzo, who heads the data processing products group and, J. D. Kuenler, who is resident of the new systems products division, which

48, and the 4300 line. Amdahl link-up

THE job processing aystem being developed by Brook Street Buraau (CW, July 26) paes a Datapoint 5500 for data collection and input to the BOC Data aolve Amdahl 470V/6. The processed information is then fed back to Brook Street where job matching is carried out on Delta Data 4000 terminals, of which eight have been installed so far,

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	87	65	55	875	4010-1	323	. 13	212
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Nonh Thames: CMC, Gordon & Golch, Heinz, London Transport and Midland Bank. Benefits of SME North West: Littlewoods. YOUR front page article, "ICL clears the way to 2900" (CW, systems can be converted systems can be converted by the state of the systems can be converted by the system by the sys end users; costs are mends

period; "split sessic

period, "split session realization of the limit at ed, the lise? she being tied in the 1990 philips and computer users to trained in 2900 techniquit fore native mode is adopted. SME la not merely concerned DME) to native 2900.

The concept of SME is thut of ment. This means the contegrated environment (VME/

By Peter Hewitt

MICHIE'S PRIVATEVIEW AI comes of age. THE microelectronic revolu

tion is usually perceived in terms of whntever is most immediate - to the neglect of more fundamental implica-

Every radical new technoingy shows this pattern. The significance of steam power was nt first seen only as a cheaper way of pumping water out of names

When the age of transporta-tion dawned, the use of the locomotive engine to enrry passengers at speed was denounced as medically dange-

We even find in Snmuel Butler's social fantasia "Erewhon" the new "vapour englnes" depicted as taking over the world!

The historian will look back over the eorly years of machine intelligence. What will be identify as the equivalent to Stephenson's Rocket? Astrong candidate will be the Mycln program, developed at Stanfurd Medical School, particularly in its domain-

independent Emycin form, Appropriately, the opening lecture at last month's AISB

Summer School on Expert Systems, held in Edinhurgh. begnn with one of Emycin's latest success stories an Expert System for interpreting tests of lung functions.

The program, Puff, is now in routine use at the Pacific Medical Centre in San Fran-

The lecturer, Dr Edwird Feigenbaum, heads the Heuristic Programming Project which he founded at Stanford University in the nild-1960s. He took his audience on n swing through the successes of 14 years' patient dediention to the new craft of knowledge en-

Feigenbaum is uniquely equipped to summarise its emergent principles and his tour of selected case studies set these principles before an appreciative British audlence.

The composition of the audlence itself marked a new departure. No fewer than 30 of the 100 plus participants came

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attended what has come to be regarded as

This year the Bail will agein be held under

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from industrial and government agencies. Artificial intelligence is entitled to celebrate its coming of age when it can show the capability of enruing a living. At Edinburgh, it was abundantly plain that this moment has come.

The first afternoon witnessed a presentation by Ray Carlinri, originally one of Feigenboum's Stanford tenm, now a member of Lederie's industrial laboratories in New

York State. During a year sandwiched between two appointments. Ray worked in my Edinburgh group to refashion the experimental chemistry program, Congen, into a practical

He was able to report the adoption of his new style Congen by industrial scientists at Shall's Sittingbourne research centre.

But let us not go overboard about applications. The smell of practical success can have whiff of technological benefit. rescarch sponsors show inclinations to argue that basic investigations can now be let go hang.

The real situation is quite opposite. Never has tundamental inquiry been more acutely needed than when applied successes begin to expose our ignorance uf the fundamentols of cognition.

It is from these fundamen tals that innn-machine consultation systems - if they are to be cheap to make and safe and casy to use - must be struc-

Richard Young, of the Applied Psychology Unit at Cambridge, argued with illustrative variations that the construction of expert aysteins in the form of pettern-directed rules - now the dominant practical methodology - intimately parallels the cognitive representations of the human

A separate and deep-scated need for basic research arises from the limited nature of Expert Systems as we know them. Knowledge engineering has so for confined itself to the implementation of such mental skills as can be completely embodied in pre-stored

We see this kind of problemsolving in human experts whom age has robbed of the power to innovate and learn. Yet these nucients, hide-bound and blinkered, can still surprise by high performance when confined to familiar ground, Eventually, however, we would like to engineer nonsenile intelligences!

Steps in such directions were described by Ivnn Brutko and Tim Niblett of Edinburgh, who reported on a chess progrum able to generate new strategles through conjectures and refutations and by Ross Quinlan of Sydney. Australiu, who described machine learning in the context of database com-

The second morning belonged to logic programming, a fad of exclusively European origin destined, in my quinion, eventually to carry all before it. J. A. Robinson himself, who started it all with his 1965 naner. "A muchine oriented



logic hased on the resolute principle." opened with a tou de force which combine sporkling clarity with depth is these and other respects to mirrored his own tutorial mas terplece "Logic, form and function" published a les

weeks earlier. Different incarnations lagic programming in the scribed respectively by David Warren of Edinburgh, and h Clark and McCabe of Impetil College, London. Substantial detail will be

available in the proceedings of the Summer School to ke nublished later this year, I shall contain for a fully column my reactions to I Summer School's second half

REFERENCES

Logic, form and function by A. Robinson, Edinburgh University 1²ress, 1979.

Expert Systems in the next electronic age (procedua of the 1979 AISB Summer Schol edited by Donald Michie Ede burgh University Pres fact

passed by the Food and Ir.

They call, fur example, for

racy; for the mainten-

controls to protect pro

enforce these procedures

A manufacturer who fe:

open to prosecution note:

with the check

In its editorial conce

PROGRAMMER NOTES

Ultimate liability for mistakes

IT is all too easy, when lavalved with the intricucies of a pro-gram, to forget that one's code will ultimately take its place in a "current good manufacte" demanding and dangerous real There is a temptation, for rules on the use of computed xample, to attach a second computed rules on the use of computed computed to the use of computed com

example, to attach more the manufacture and proce importance to the program of drugs. numerical results. The former input of formulae and are, after all, the more interesting and challenging aspects of the look

Yet in the long run it is mistakes in the latter which will be duplicates; and for apply most visible to the user.

In many cases, the incorrect and control logs against placing of a decimal point will be authorised update. detected quickly. In some, however, such as un error routine in n flight program, it may not. And he consequences could be very

So, it argues, will the 52 analyst who ignores the Similar considerations apply a several other areas, including trois or the programmer fails to document his might esting in general and the documentation of program

If the drug turns out the With the rapid gruwth of balances is e computer upplications end innegligence. creasing dependence on com-

type of program error must be growing likewise.

But there have os yet been no indications that the ultimate responaibility for e software error could be leid et the feet of the programmar.

or not in this

A situation has, however, deloped in the US in which a
eligent programmer could be
to be criminally liable
e circum.

The circumatences under which this could erise era outlined in the letest issue of Computer Law and Tax Repurt, a newsletter published in Roston e newsletter published in Boston Progremmers en enwsletter published in Boston Shown little interest es an "intelligence service for shown their trade is

es an "intelligence service for shown little interest computer users and their problems of blishing their trade is soon on a part with melt slow of the hard with melt slow could be hard to be hard t points to recent regulations this district

Confusion for users over which 290X op system will be used

SOFTWARE FILE

facilities-rich enhancement of

its 2900 database management

system IDMS - ICL is arguing

that its dota management soft-

ware is now at least as good as

any in the world. The new soft-

ware, which has been at test

sites for a year, becomes

generally avoilable with release 5x32 of VME/B.

is to offer users more options,

providing several alternative

mechanisms where IDMS pro-

vided only one or two. It there-

fore stands in the same relation-

ship to IDMS as IDMS doas to

IDMS-E, the subset form an-

nounced earlier this year (CW,

High on the list of new fea-

tures is the option to build in-

verted file structures. The prin-

cital file organisation supported

by DRMS such as Adabas, thia

option was not previously available in IDMS, which is network.

IDMSX aupports three file

Inversion mechanisma: standard

record-type inversion using

logical keys; indexed sets based

un pointer arrays; and record chaining, which is most efficient

Another IDMSX Innovation is

sequential placement mode.

Joining the existing random, via

scl, and direct modes, it has the

same characteristics as indexed

sequential organisation, offering

the chance to optimize for

Also nudressing DBMS per-

or short sets.

May 31 and June 7).

The main intention of IDMSX

ICL tops out its database range

virtual stornge. Any convenient

subdivision of a database can in

effect be held in main memory.

eliminating the need for disc

access to frequently referenced

Among other enhancements

are further recovery options,

almed mainly at speeding

recovery of large databases; the

option to set up a temporary file

of before look images; and ii

Nearly all the enhoncements

stem from requests from the

which ICL regards as active and

very knowledgeable. There are

eurrently over 130 IDMS users

on 2900 and about 50 users of the

data dietionary system, DDS -

the other main component of

ICL'a data management

offering, DDS has matured rapidly

since its general release two yeara ago, being seen by both users and ICL as the hub around

which DP developments must

Unlike IDMS, it was imple-

mented by ICL from scratch and

it therefore differs considerably

from Cullinane's own data dic-

tionary. In its active role, for

example, it can generate

schemes and record descriptions

software re-uses the IDMS

handler su that aspects such as recovery - a very strong fea-

DDS uses IDMS as its file

directory for this function.

directly whereas the Cullinane

existing IDMS user group,

number of enhanced utilities.

data such as tax tobles.

THE good news for ICL 290X users is that a new operating system with integrated teleprocessing capabilities is on the way to see them into the 1980s.

The bad news is that a conroversy has arisen over which of two products, Ice or Supremoe is to be offered and, onca again, the poor bewildered user left guessing.

There ere four existing operating systems available on the 2903, 2904 and 2905. They are: Exec i, which runa on all models; Exec 2, which runs on all but the cut-price models. Exec 3, which runa on the 2904/ 50 (CW, March 23, 1978): end Exec 5S, which runa on the 2905 (CW, April: 26) and includes microcode assists for RPG II end SC accesses.

All are competible supersata of the one below, end are besed in the Exec used on the small 1900s Internally they ara colleclively known by ICL as Emoe. No one een deny the enormeus succesa of the 290X line,

which took ICL Itself by surprise. It turned out to be tha night product at the right time, and the success seems to vindle cale the choice of oparating sys-

Nonetheless, it is a pre-dominantly betch operating system, and the demend today is mainly for transection proceasing. The 290X represents the same half-way house betwean the two as IBM's System 34

compared with System 32.

18M has, however, decreed to the futura for System 3 traisaction processing and database amilications. alabasé applicationa.

ICL has long been aware of the need for aomething comparable and was given a grant by the Department of Industry to Invest in deciding upon n new

operating system. One of the criticisms of ICL in the past was that, unlike IBM, its resources were so thin that it could only invest in one solution to a particular problem, and if the one chosan turned out to be a dead end, the company would be in trouble.

ICL is a big company now, reaearch end davelopmant budgats ere a little fatter, and two alternative projecta have baen under way for some time to develop the eppropriata opereting aystem.

greted Communications Executive, la completely new the other, code named Supremoe, ia defined aa a "dealgn concapt for the future of Exec" essentially major extensions of Exec to meet the future requiremants of 290X uaera.

The controversy has been whipped up over the fact that now there ere two epparently vieble options open to ICL, one will heve to be dropped.

It appeare that the letter, Supremoe, is presently in the ascandancy and, ramembering all the problems ICL had in get-ting VME/B and VME/K right. one can understand why. Whichever route is chosen,

users should be eble to rely upon the existing Execs. If this proves not to be the case, ICL will put in leopardy all the potential future business of its coveted 290X user

Lloyd's contract

LDGICA has won a contract to extend the ships database maintoined by Lloyd's of London Press. The main enhancoment will be the incorporation of ownership details linking the 33,000 vassels currantly hold in the dotabase to about 12,000

hip-owning companies.
The PDP-11/70-based sys tom is used to produce publications such os Lioyd's List tended primarily for online use, also benefits from the high per-Lioyd's Shipping Indox ond Lloyd's Voyage Record. formance of IDMS in the 2900 virtual machine environment. IDMS under VME/B is inevit-

IBM version ably re-entrant and multi-

ture of IDMS - arc incorpo-

The dictionary, which is in

in the Inst few years to produce

their high-performance multi-

File, June 15, 1978).

hold subsets of a database in rated automatically into the

dictionary.

threading.
This is in sharp contrast to the PACKAGE Progrnms has announced nn IBM System 34 verequivalent IBM environment, In slon of the MMS general ledger which programs must multiand financial reporting system. Written in Cobol, it requires a task in order to multi-thread. ICL has not therefore had to 48K System 34 and costs £10,500. re-architect IDMS to cater for growing online use - a task

First fruits which both Cullinane and Cincom have had to undertake

SALES, purchase and nominal ledger, and payroll software for the Adds System 70 and 75 have threading versions, viz IDMS 5.0 been among the first fruits of (Software File, November 2, Gemini Computer Systems' new microcomputer division, Genninl Mlerosoft, based In Manchester, 1978) and Total 8.0 (Softwore

Real time extensions on Basic interpreter

A BASIC interpreter, including real time extensions for such applications as instrument control, has been developed by Research Resources Ltd of Welwyn Garden City. It is currently available for the South West Technical Products 6800 and for

the CT-82 graphics VDU. A version of the Interpreter which is called LabBasic, is under development for the Commodore Pet and the company is also working on a compatible compiler that will

Among LabBasic extensions specifically designed for simplifying the interface to external quipment are Sense, Flip, and Delny commands for the contro of input devices: commands to change the state of output lines; and facilities to generate pauses of known length.

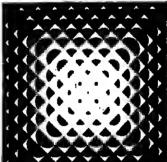
The system also includes an interrupt clock. The two current versions of LabBasic are priced

the engineer or mechnnic can componenta. They can be attached to a key-ring, and used singly, or held adjacent to each other in blocks of two or more.

This week's problem is to work out a circular array of five

FEELER gauges are "blades" of "Integer" gauges, such that all various thicknesses with which integer totals from 1 to 21 may be measured with the technique mensure the gap between two already described. The first question is "Which five numbers will do the trick?" and the second "Where precisely must they be placed round the keyring, in relation to each other?" See page 45 for solution,

Britain's



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Terminating the printer

under Univac OS

AS pointed out by Colin O'Keafa of British Airwaye London site, lak AS pointed out by Colin O Reals of Strices Allwaye London May OS operators should silveys arop the printer before cancelling 1 kb x output stage jOp Spot, June 28).

And now Alan Winter of BP Oll in Hamel Hempsteed, gives the

advice in relation to the Chivac Co. The Chivac Co. Has commente, "Univoc operators, particularly trainess, should six take care whon cancelling a job which is in the process of being print.

perstors use to control the printer: "SM device T", to terminut to levice, and "SM dovice i", which stands for initials, or start it.

take care to re-stign the paper before ro-initialising the darks.

Otherwise, the next print-off will be mis-aligned."

Ex-TOPS students

"Whatever the reason for terminaling the printer, the operator

natead of Concel, we use a 'SM device E' keying where E stade

dvice in relation to the Univer OS 1100 environme

grows, more and more sites are hoving difficulty in finding experlenced and qualified staff.

To overcome this problem. many are now looking to recruit ataff at junior level and fill the senior positions from within the

Colleges of further education nove a big role to play in this context. In foct, the main aim of "vocational further education" is to prepare young school leavers for the job market, sccording to Angus Redpath of Annieslund College in Glasgow.

A senior lecturer, Redpoth writes, "The moin computing as they leave the college. course run at our college is the Scotlish National Certificate in computer operations. It is a one-year, full-time course and sites. leods to the examinations of the

Council."

The course is mode up of five subjects: operations, programming, dato processing, computer theory and accounts.

He goes on "While the course Is primarily concerned with computer operations, we are aware that employers want staff at the junior or trainee level. who are not over-specialised in operations to the exclusion of all

So the students are trained up to junior operator level although, according to Redpath, they are capable of carrying out most operational duties as soon.

To gain proctical experience of operations, they spend at least

"This is an intensive part of

efforts to extend it. The good relations we liove built up with companies over the years have helped towards a clearer understanding of mutuol needs and

Throughout the year, the students take part in collegebosed projects which are Intended to be of practical benefit.

"Tha main reason for their inclusion in the course is to knit together the aspects of comnuting dealt with under the various subject headings.

"This type of work has a direct bearing on their studies and helps to maintain a high level of Interest and motivation during a very busy year."

Although the college does not have an in-house mainframe, its computing facilities are more

Pet, data prep equipment, and links to a Prime 400 and a DECsystem-20.

"The net result is that the students are kept very busy from day one of the course. This is no soft option es an alternative to work."

Redpath says that the demand for the college's students is so great that about 90 per cent of them have positions in the industry before they have completed the course. He goes on, "Feedback indi-

cotes that operations la not only a worthwhile career in itself but that the opportunities of moving into areas such as programming and analysis are good. The majority of the students graduate from their initial appointmenta to higher posts within 18 months to two years."

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his operations course at Borehomwood College in Herts. Steve, who works at Jermyn industries' site in Sevenooks. Kent, told me, "Two of our operations staff gave in their notice recently; one of them is a senior operator, and the position is to be filled from within the

FORMER TOPS student Steve

Ward (Op Spot, July 7) has o

chance of moving up to the

position of senior operator, just

eight months after completing

There are three cundidotes for the position, and the operations manager is to work with each of them, to find nut who is best suited for promotion.

Dave Townsend, unother ex-TOPS student whose progress we have been following, is

"in addition, the workfold increasing all the time much, in fact, that we place install two new &constr

makes operating a prem

From the efficiency we

point, staff should clean of.

they go olong, returns

inceiln to the appropriates

ruck as soon as they at

langer required by the tysic

Consider, for example, as

of jobs which uses a lot of u

some of which are needed

once per run, while others!

required several times.
As each job finishes, 13:

too easy for the operation

odopt a "put them awa

minute" attitude. I have

that myself. But in the load

such an approach make the

The operators should the

use of the run documents

An operator at the Fits

National Bank of Chicago a

London, Dave said, "I ge ud

everything, from running tu

systems to using the IBM with programs. It sulls me because

earn more and don't get book"

Dove attributes the wife

mainly to the fact that he

employed of a small sket:

points out that recent develop

ments have added to his dos

of five operators, two en dy

and three on evenings, but et

of them teft and the compr

has decided not to replace in

"Until recently we hid a tec

Tidiness is functionanit-picking is not

VIEWS on keeping the computer room clean and fldy vary considerably from one installation to the post tion to the next. At one site I visited, little

occupation. But it shoulds: attention is paid to the matter, taken to extremes. with the result that tapes, discs and boxes of stationery are kept on the computer mont floor due mulnly to a lack of storage facilities in the area and not the fund of the operators.

A rather different approach is used at another installation I know of. At the end of the night shift, the operators are expected to cleon all work surfaces and

vucuum-cleanlug printers and wiping print Irulus is fair enough, but at this site the operators are expected actually to remove the trains and open up the back of the units for

One bright morning the manager sauntered Into the more than once and keep by the console. The solutions when the console is the solution of the arca and tuok it upon himself to inspect the units, une of which he discovered was a bit the tape racks as soon and system has finished with the dusty. He immediately seized on this and ordered the operators -Regarding the maintain peripharals, it is important thay are cleaned regular order to prevent results are considered and poor until quite property and prope who had just completed o 12hour night shift - to clean ail the printers agein. (If ever an operators' union was needed, it

was needed un that occasion:) It is obvious that neither site puts the right emphasis on com-

£20 fee for Pet repairs

COMMODORE Pets are now being repaired for a flat fee of £20 plus the cost of parts, by Lulon-basad Pet distributor

The servica is open to all Pet owners, not just those originally supplied by Isher-Woods. it is hoped that an automatic

report conjectures, however, that by the end of the lifetime of the new 16 bit processors now to this che coming on to the market, a cla 68000.

Meter reader

By Martin Banks

from UCSL Microsystems, seen here in the final stages of assembly at the company's Berkhamsted facility, is now being offered to gas end alectricity authorities for meter reading applications.

This is the market being investigated by Pleasey with a specially developed portable system (Micro Nows, April 28).

UCSL estimates that the European market for such terminals could be as high as 29,000

in operation, each M50 would be loaded from an authority's central computer with all information necessary for the mater reeder's "walk". The reeder, at each reading point on the walk, enters the meter reading into the terminal's mamory. At the end of the day, this data is read back into the cantral computer.

AMD-Zilog race for Z8000 support

ond macro assemblers for the

For AMD, however, the big

une is likely to come early next

year with an upgrode of System

8/8, known os System 8/16. This

will incorporate a Z8000 CPU

its evaluation board, costing

about £700, will include Iwo

RS232 ports, 24 parallel 1/O

tines, 8K bytes of RAM and 12K

bytes of PROM/ROM space -

2k bytes of which will be taken

up by the monitor. Options for

this will include an Ascli line

assembler, and a keyboard and

20-character display.

Both Ziling and AMD state

variant of the 16-bit processor

optional CPUs,

board as standard.

building up between Zilog and Advanced Micro Devices as 10 which will be the first with the most in supporting the Z8000, lil-bit microprocessor.

MICRO NEWS

Following the recent announcement by AMD of three new peripheral chips for the processor (Micro News, July 19), the company has announced a new development system that will not only emulate the Z8000 prior in its availability, but will also allow hoth hardware and software development on the Intel 8080 and 8085 processors, as well as the Zijog Z80, and the Z8000

as it becomes available To complement this, AMD is also planning in introduce a Z8000 evaluation board which, in addition to operating in stand-akme mode, can also be plugged into the new developnicht system. Bolh ara expected to be available by the end of this

year.
Zilog, for ils part, has just introduced a single-board Z8000 development module, but a fuil development system is not expected until early next year. Its introduction, however, is likely to be followed later in the year by a general-purpose computer system, which is expected to employ a multiple processor configuration.

The AMD development system, known as the System 8/8, in fact uses an 8080 processor chip. The minimum configuration, costing £5,095, includes 32K bytes of RAM, dual floppy disc drive offering 512K bytes, one RS232 port and six parallel norts.

The minimum software is an 8080 macro asaembler and a Z5000 translator and macro assembler. This latter is currently suitable only for software development as it does not have sufficient operating speed to emulate properly a hardware configuration system. There is also a text editor, link-loader and disc operating system.

Options for the system include memory expansion, Z80 and 8085 CPU cards, in-circuit emulation boards, ond a hard disc system. Software options include Bosic, Fortran, Pascol

lest system based on a Pet rocomputer will be up and running by this weak.

days from Zilog's announcement of availability before releasing any purts, Zllog claims to have had samples available

The Zllog development module features a Z8002 pracessor, 2K words of monitor, 16K words of RAM, dual serial interfaces and 32 programmable 1/0 lines. It is capable of being used either as a hardware and software development unit, or being designed into a system configu

Both Ziling and AMD state
that samples of the Z8002

MD evaluation brand is that it

Fairchild's figures leap

WITH over 93% of its shares now bought by Schlumberger, Foirchild Camers and instrument has onnounced quarterly financial results that include a 32% jump in sales and a doubling of profits over last year.

Second quarter soles were \$167,999,000, 32% up on the same querter feet year, and 15% up on the first querter of this year. Profile, at \$12,592,000, were more then double those for the same querter leat

Figures for the first helf of this year show the company with a rise a profits of 93%, to \$19,619,000, on sales that edvanced by 29%, to

Growing importance of the 16-bit market

DESPITE tha fact that the wider word size of 16-bit microprocesaors offers designera little intrinsic advantage in the devalopment of microcomputer systema, these devices will assume considerable Importance in the marketplace by 1983. . .

This is the primary finding of a Technique Ino of the US, and published in the latest issue of licrocomputer Analysis.

The degree of the importance to the marketplace is estimated In the report as resulting in o 60% annual growth rate in aales of the devices over the next few years, with a share of the microprocessor business rising from 8% now to 23% by 1983. One of the principal reasona

cited by the report is that the 16-bit address bus of the popular 8-bit microprocessors is placing increasing capacity restrictions on system memory. It points to the fact that in the early Seventles, 64K bytes of memory seemed bytes.

seemed huge. Now, it is a Magabyte of memory that seems profligate for microcomputer systems. The

Megabyte of memory will itself be restrictive.

The reason that thase new 16-bit processora offer little advantaga is that much of the processing work thay will be used word size over the currently predominant 8-bit devices is

positive disadvantage. This could lead to little improvement in throughput, for If most of the data can be fitted into bytes, half the memory wasted area being the high-order bits of the 16-bit word. Certainly more efficient utilisa-tion can be achieved by packing. two bytas per word, but this needs the axecution of sequantial instructions to unpack the bytes on reading.

So, the report suggests, the higher processing speed of the 16-bit devices becomes canceled out by the increased inatruction processing overhead. . .

analysis of the current and future crop of 16-bit processors, together with en empirically de-rived chart of their relative power. Top of the pile, according to this chart, will be the Motor-

How to stop having to explain why the computer won't do everything the boss expects



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messages on the hardcopy and haif-hour or so, the hour or so,

record information relating to Job canceliations and chongea in

THE IBM OS operator uses two commonds in relation to the system hardenpy lug: Log and Writelog.

Log is used to record messages on the hardeny and half-hour or so, the information is the state of the system, such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the state of the system should be such that the system shou

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Keith Dumbletan has ben

syace, the electronic system and components company.

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sion of Mullard.

time in the industrial sales in

have been announced at Digital Equipment, which include the appointment of UK sales, markering and CSS munagers, and CSS and engineering managers for Europe.

Former UK mnrketing manager, Tony James has been promoted to sales manager in the UK. He has spent two years as marketing manager at the company's European head-

quarters in Genevo.

As seles manager, he succeeds

Dave Buckingham who now becomes manufacturing, distribution and control product mnnager for Europe.

Blil Passmore takes over from Janies as marketing monager. - responsible for engineering His most recent position was that of control and south-west district manager for Digital. He joined the company in 1971, and was previously with Nuclear Enterprises and EMI Electronics. He is replaced by Frank

Munager for computer special systems in Europe is Kriataffer Sygei, who will be responsible for the four special systems groups in Reading, Munich, Paris and Stockholm. He was formerly CSS business manager

Stuart Haughtan has become manager of the UK CSS group, based in Reading. His previous experience includes several years with the UK atomic energy authority.

Formerly ESE manager in Reading, Jim Wade has been appointed European engineering manager, and will be operations in Europe including product development management, product planning, safety standards and the European aoftware engineering group aiready established in Reading. Dick Davies assumes the role of ESE manager.



TRAINING manager of Redifon Computers, Peter Lieddow, is seen here showing a memory board to children from ifield School, Crewley, who attended a three-day Cereers Exhibition at Crawley Tschnical College. Redifon was among 65 local firms at the axhibition, which was attended by over 3,500 schoolchildren. One of the main attractions for the children was the R850 terminel, which they sil had the

Formerly director of Telecom- turnkey systems.

Terry Baxter hes joined puting's system division, he will Euroco Computer Services as now be responsible for producsystems development manager, tion of all software products and

BIS prize for student

The BIS Applied Systems cash prize for the best finel year rolact et North Staffordahlee olytechnic has been won by Mrs Diane Sishton. Hor projec was entitled "The Implementa-tion of a natural language pro-cessor using compatible seman-tic derivations".

Peter Chapman has become group manager far Fairchills BIS sold that Dinne had ehown "exceptional morit and offort" in developing her pro-ject, in which she produced programs which implemented principal strategies. semiconductor division, when he will have special responsibility for mlcropracets; applications technology. Re joins the company from [7] : Business Systems.

Prizee were also ewarded to Nall Tabernar for precticel pro-gramming and Michael Ames for the best practicel workshop. The ewards ere made to enco rege undergreductoe in their prectical course work.

Daniel Wendock, formerly director of operations for ITT Africa and the Middle East, has become group executive for the same area. His predecessor, John Gullfoyle, kas been appointed president of iTT Europe, Weadock will report directly to James Lester, executive vice-president and u member of the ITT office of the chief executive.

Brian Seer has become manager of venture development, a newly created position with GenRad. He will be involved in developing five-year strategic plans involving iden-tification and creation of new business opportunitles. He was previously vice-president and general manager of Fairchild's sentry systems division in

DIARY

AUGUST 19-22
Third Rocky Mountain Symposium on inferocomputers, IEE Computer Society, Plugrae Park, Colorado, Contact Michael Tindall, Dept of Computer Science, Colorada State University, Fart Collins, Ct. 80523.

AUGUST 27-SEPTEMBER 2 Trade and technology in orbit. Orb Foundation. Wembley conference

SEPTEMBER 4-7 Compcon Fall '79, IEEE Computer Society. Capitul Hilton Hotel. Washington DC. Connet Compcon Full '70, PO Box 639, Sliver Spring.

The future of real time languages in process control, BCS Pracess Control apecialist group, Reading University, Reading, 10.00.

SEPTEMBER 10 Datahase systems and Infurma-tion retrievel. BCS Information group. Computer Cambridge University,

SEPTEMBER 11 Performance management. IDPM West London and Oxford branch. Tesdata House, Hatfiald Road, Slough 18.30.

Bar-coding techniques in stock control. IDPM, Hull Crest Hotal, Farriby High Road, North Farriby, Hull. 19.16. SEPTEMBER 11-12

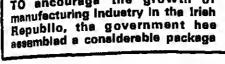
Computing and communicationa in tha 1980s. Martin Simpson Research Associates. Park Lane Hotel, 30 Central Park South, New

SEPTEMBER 12-14 Shape racognition and artificial intelligence. AFTEC and IRIA. Taulouse, France.

Optimal control of large aceia systams. IEE. Savoy Piace, London WC2, 09.45.

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TO ancourage the growth of of grants and tax railef, PAUL poration tax of 10% on profits until mblad a considerable package exporte until 1990, a reduced corgrants on the cost of plant.

NORKETT here describes the ed- 2000, non-repayable grants for sits Republic, the government hee ventages, which include no tex on development and tex-deductible

Tax advantages of running a business in the Irish Republic

two words tax and cash. The irish government hos put together a package of Incentives that arevery attractive.

The tax advantages are best for the manufacturing company with a high export ratio. As the Irlsh market, in population terms, is less than a third the size of London, manufacturers will almast certainly be exporters, therefore the incentives are in the right place.

For a company wishing to set up a factory in the Republic there will be no tax on export. prafits until 1990 provided that the export investment commit ment is made before 1981. From January I, 1981 until December 2000 a reduced corporation tax af 10% will apply to all profits derived from manufacturing in

Existing manufacturers that are receiving fiscal advantages. from the system of export sales elief will not be adversely affected by the introduction of the naw 10% rata. The two schemes will run concurrently until 1990. After that date the 10% carparation tax rate will apply to all manufacturers in the

running a business in the Irish Republic can be summarised in than UK incentives offered for some assisted areas. The Irish offer 100% first year allowances on the gross cost of plont. This is quite generous If a 50% grant was given - the UK usually deducts the grant from the allo-

For readers not familiar with

The big incentive is the non-rapayabla cash grent towards the costs of site development purchase of fixed assats.

these terms a few simple figures may help to illustrate tha point: suppose a company buys £100,000 of machinery and secures a 30% cash grant. In Ircland the £100,000 may be deducted from the first year's profits, whereas in most UK-assisted oreas if a 30% grant was obtained, only £70,000 would be deductible when calculating taxable profits.

Dividends paid to uverseas corporate or individual shareholders will be fully exempt from Irish tax, und there

land has double taxotlon agree- programmes for workers in new ments with many countries Including the UK, the US and most of the EEC. This means that in many inatances profits repatriated from ireland as dividends grants there are also facilities for will be either wholly or partinlly exempt from tax in the country of recaipt.

The blg incentive is the nonrepayable cash grant towards covering commercial and politithe costs of alte development and purchase of fixed assets. If a company was considering a fac-tory in the western half of the Republic, then up to 50% of the fixed investment costs would be

paid by the government. In these matters the govern ment appears to be capable of acting quite quickly. For example, the DeLorean deal for manufacturing the DeLorean sports car was a £65 million investmeni package and was completed in 45 days. The deal included a significant subscription for government shares

Once the fectory has been sel up there are additional grants available of up to 35% for the fixed costs of expansion and modernisation. There are also subsidies for in-house research and development programmes. The training grant is another uscful benefit. Grants are paid

hiring training consultants.

In addition to governmen raising capital through private and State-sponsored finance houses. For exports, credit insurance

port credit finance to be obtnined from the banks at a preferential rate.

cal risks is provided by the

government. This enobles ex-

The financial and fiscal ad-

Dividends peld to oversees corporate or i n d | v | d u a | shareholders will ba fully exempt from irish tax, end there are no withholding taxes.

vantages of setting up in the Republic of Ireland can be summarised in a simplified example. Assume that a minicomputer manufacturer has designed a product with proven market potentini. To set up production the company needs 50,000

The town of Ballincollig in County Cork is the location of the Date 100 plant that builde most of the equipment sold by the company in Europe. The mein product is the Keybetch multi-terminal date entry system, one of which is seen here being checked out. The Irish plant was opened by Date 100 four years ego and now amploye more than 180 people. Future products to be built there could include the Sycor tine of Intelligent terminals, because Sycor'e Canadian besed parent, Northern Talecom, now also owns Data 100 (CW, December 7, 1978).

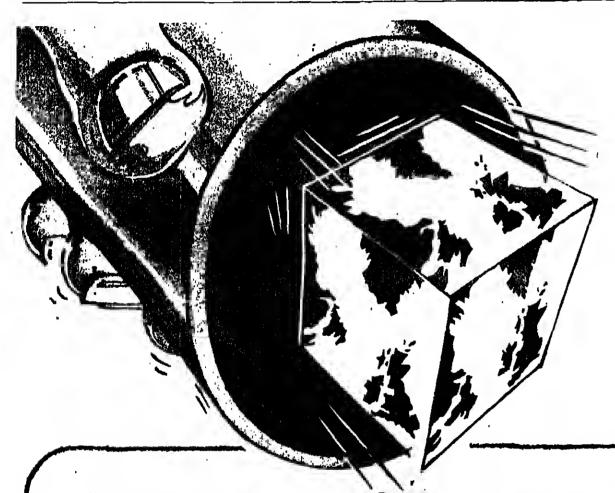
COMPUTER WEEKLY, August 9, 1979

square feet of light industrial duction is the cost of finance, space, £50,000 working capital There would be little UK tax and £500,000 fixed capital. It expayable in the first two or three pects to employ about 50 people. Sales expectations are: year one, £500,000; year two, £1 million; year three, £2 million, with a years because of the capital allowances and stock relief. To maka a simple comparison

for the same set-up in Southern constant 30% before tax net Ireland requires o broad-brush approach on comparability o If the company wants to set up in the UK, the two main pro-Assuming the sales forecast

lems are finding the right locaand production capability would tion and financing £500,000, be the same as in the UK, the There may be some difficulty ofter-lax profits would be higher. The difference arise: in getting finance on realistic terms because of the financial from investment grants, cost of nstitutions' apparent reluctfoctory space, and finance. If a ance to back technology. How-30% grant was allowed on the ever, assume finance is arranged fixed investment and balancing at an average cost of 20% and finance obtnined at 12% with factory space at £3 per square foot. Taking these simple figures and making some fairly crude factory space at £1.50, the three-yeur aggregate after-tax calculations, the three-year

The tax advantages would aggregate after tax profit would start to show after the first three be about £610,000. The main de- venrs.



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The Oxlard Busins for British Compuler



REPUBLIC OF IRELAND

US Department of Commerce statistics for the period '74-77 show a 28% average enhual return on investment for US manufacturers included in the Republic of Ireland - more than twice the European average.

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regression con the self-control of the self-co

INTRODUCTION TO PASCAL Use of booleans and state variables

THIS orticle introduces the use of boolenns and state variables in writing readable programs.

Recep, and on to checks

In Part 5 of this series, the outer shell of a Timechecker program was discussed. The main step in the program was a call in a procedure to input times for one employee for one day. Lost week we looked at the details of inputting these times. Now, like any good programmer, we must complete the input procedure by checking the times for inconsistencies such as signing off before signing on or having different days for the times. (Blaze lne, does not have shift working yet.) The full list of checks is:

1. All days are the same,
2. The mornings on time is after the gates open at 7.30 am and

the afternoon-off tims is before they close at 6.30 pm. 3. Both "off" times are after their respective "on" times.

4. The time taken for lunch is at least the required 30 minutes If any of these gives a negative result, the error routine is colled, which, on return, positions us at the start of the next check. The question is whether it is mesningful to do subsequent checks if one has failed. In the last case, the answer is No. If the employee muddled up the on-off times (check 3), it is more than likely than the lunchtime check will fall. This could give a false picture, since middles can be sorted out easily but a lunch error must be reported to the Personnel Officer. As a result, the fourth check should by omitted if the third falled. Of course, we want to do this without repenting the question and therefore need to preserve the answer somehow for future reference. For this, we

What is a boolean?

A booleun is o type of voriable which is better known as n ogical (in Fortran) or a flog. It takes a volue that is either true or false. True and false are also the results of conditions which we use freely in IF statements. Thos we can say that the expression

IF expression THEN...

must return o boolean value. Boolean variables come into play when we need to preserve this condition for future reference, as in the case discussed above.

In general, assume that the states of all four checks should be preserved. Sn we declare four hooleun variables

VAR dayerror, gateerror, inouterror,

A day error would be established by looping through the four times and throwing nut any nne that does not conform.

today := times[inmorning]. dny,

dayerror := false; FOR session := succ(innorming) TO outuffernoon DO duverror := day error OR (times[session].day<, >Ioday);

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THE HATFIELD POLYTECHNIC SHORT COURSES IN MICROPROCESSORS

The following courses will be held during the Autumn Term:

Introduction to Microprocessors (Evenina) Introduction to Microprocessors (Afternoon and Evening) Software Design for Microprocessore (Afternoon and Evening)

Further details from Mrs. P. A. Ingrem. School of Information Sciences. The Hatheld Polytechnic, P.O. Bex 109, Hatheld, Hers Hatheld 68100, ext. 253

This little snippet illustrates thet loops can count over symbolic volues as well as numbers. The succ function gives the successor; succ(inmorning) is therefore identical to outmorning. Dayerror will remain false if no day is out of line. Now we can say ut many

IF dayerror THEN error(4) without repeating the lengthy question.

Boolean and other functions

Moving on to the gate error check, we see that it entails finding out whether times[inmorning] (which is a record of three fields) comes before gateopen, which is set up as follows:

VAR gateopen : time; WITH gateopen DO

hour := 7; min := 30

While it is sensible to define equality of records (ie time! = time2), ordering depends on the meaning of the fields end cannot be established simply by using an operator like < (less than). We must enhance the lenguage by defining our own "operators" to work on times. These are called functions, and can be used as

goterror : = limecompare (times[inmorning], before, gateopen) OR timecompare (times[out ofternoon], after, gateclose);

Timecompare is a function which takes three paremeters - a time, a relation, and another time, and returns a boolean value, true or folse. Its Pascal declarotion is:

FUNCTION timecompare (tl: time; r: relation; t2: time): boolcan:

What are relations? Here we make use of symbolic values ogain, coming up with

TYPE relation = (before, beforeorequal, after, ofterorequal); which is far safer and more readable than defining codes for them

(eg 1 means befora, 3 means after etc.) inouterror will use timecompare in the same way and once established, we can conditionally perform the last check ie

IF NOT inouterrur THEN luncherror := minsbctween (time[ontmorning],

limes[inafternoon]) < lunchtime; Here there is mother function, this time one that returns a value in minutes which is compared, using the built-in lessthan, with lunchtline, which is also in minutes. The minsbetween declara-

FUNCTION minsbetween (t1,t2: tlme): minutes;

The sbave declarations set out what the functions do but obviously it is necessary to define hnw they do it as well. Take timeenmpare: It is given two times and must see if they conform to the specified relation. A neat woy to dn this is to set up two

VAR less, equal: booleon;

and consider each of the fields of t1 end t2 in turn, setting the states of less and equal oppropriotely. Thus

less : = 11.day <. t2. day; equol := t.lday = t2 day; less := less OR (equol AND tl. hour < t2. hour); equal : = equal AND(tl. hour = t2. hour); lesa; = less OR (equal AND (1. min < 12. min)); equal := equal AND (11.in = 21.min);

state := searching;

reademployeafile: IF and THEN state := notthere ELSE IF employae = leaver THEN stata := found; UNTIL state searching,

('Now do different things for the two axit conditions') CASE state OF

found: ('Calculata salary, leave and pension due') notthare : (' lasue an error masaega ')

Figure 1. Search for an employee who wants to loava.

COURSES

EUROMICRO, the European Association fur microprocessing and microprogramming, is organising its sixth ennuel symposium, colled Euromicro 80. This will be held in London, and workers in the flaids of microprocessing and microprogramming are expacted to exchange ideas on the latest developments. The eructure of the programme will consist of three sessions, scientific, industrial and ehart notes sessions, allowing for brief, up-to-dute presentations of results and applications. The conference will teke place from September 16-18, and those wiehing to submit papers, should, send an inbatract before

May I, 1880, to the Programme Chairman, Mariagiovanna Cami, let di Elettronica. Politecnico, Piazza L. Da Vinci 33, 1-20133

Mileno, Italy.

A RANGE of courses can be run on a customer's own premiers, has been intro-duced by the treining division of John Gall, Computer Services. They are primarily on minicomputer systems, and cove operating systems, assembler longuages programming techniques and micro processor oppreciation. Further details from Helen Horgan, John Bell Technical Systems, Clark House, 2-6 Albert Street Fleet, Hapts, Tel. 02514 28014

3: 1



by Dr Judy Bishop

Booleans ara grast - but suffar from the basic rastriction of only reliecting two etatas, says Dr.
Judy Blehop, in the seventh pert of her 10. part series.

A lacturer in computer science et Witwotararand Univarelty in South Africa, Dr Blohop flitt be came acquainted with Paacel whan oho was etudying for her PhD at Southampton University,

While this may look a bit complicated, it is certainly easier the the equivalent IF statements. (Cobol programmers try lt out) Having established these two states, we then use the Car statement, which proved an useful in the previous stilden design the enrect value to time-compare.

CASE r OF beforeorequal : limecompare : = less OR equal; limecomparc := NOT less; tlinecompore := equal OR NOT less; afterorequal

All in all, the boolean voriables have saved us from writing less and linea of conditions and IF statements.

When two is too few

Booleans ere great, but suffer from the basic restriction of out reflecting two states. One of the most common significant computing - that of searching a list, file or srray for a special element - requires at least three states, namely:

1. The element has been found.

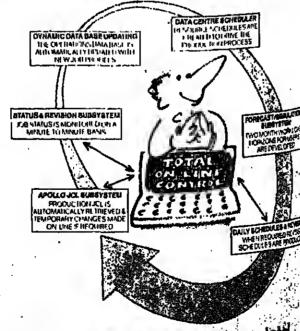
2. Still searching.
3. The end of the list has been reached without finding the element. No problem. Booleans are, after nii, just a special linis

symbolic type le TYPE boolean = (false, true).

We can therefore go uhead and declare VAR state : (searching, found, notthere);

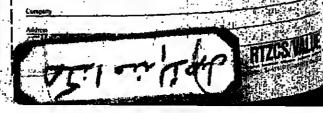
The portion of program to do the search is given in Figure !. Part 8: Dynamic people - creating space if runtime and the use of pointers.

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RTZCS/VALUE to 3 [crmyn Street RTZCS Sarphatistroit 30,1018 GLAMAR RTZCS/VALUE to 3 [crmyn Street RTZCS Sarphatistroit 30,1018 GLAMAR London SWIY 6F.B. Rel: (01) 930 4163 The Netherlands Till; (020) 2639797 VALUE SYSTEMS FOR COMPUTER OPERATIONS



Philips' terminal systems take off

AFTER a somewhot slow stort with the PTS 6000 banking ter-COMPUTERS mins system, which first made its mark in the local authority market rather than the banking and savings sector, Philipa' terminal systems business is beginning to take off in the UK. The first building society cus-

tomer, the Midshires, opted for PTS 6000s at the beginning of the year (CW, January 25) ond at the offerings of Europeon the rest breakthrough came suppliers.

The impending acquisition of with the order from the Helifax Sullding Society, the world's the Four Phasa Systems mar- minal systems based on the largest. The initial order is worth keting company in the UK, ex- hardware of the PTS 6000, and well over £10 million and covers the society's existing 400 Weekly (July 26) will lead to a broadening of what Philips Data broadening product.

Howaver, the society is Systems calls its subsystems The subsystems division now opening new branches at a rate division.
of 40 a year, and the business Four of 40 a year, and the business

Four Phase installed 40 aysSystems, the other being standthat this will generate, together

tems with 25 customers in its

alone accounting and small with the likelihood that the 21/2-year UK history, and the business computers. But of a Haifax will implement a cash target market Philips is aiming the potential markets, the dispenser network, makes the et is the one currently supplied building society and banking long-term potsotial of the con- by the big traditional key-to-disc markets look the most exciting,

tract enormous.

system auppilers, ell of which with forecasters anticipating
A third building society is expocted to announce abortly that lines to provide substantial local customer-operated cash disit has chosen the Philips system, processing capability on what is pensers and transaction terwhile the company has com- still primarily a data entry sys- minals. pleted delivery of equipment tem. with Scottish Trustee Savings

of the local authority market for cash receipting systems with the PTS 6000, the other major suppliers being ICL, Datasaab and Olivetti

It also sees signs that the Big system which is being renomed past four quarters was \$80.2 Rive clearing banks are begin-

THE feasibility study on an Electronic Funds Transfer sys-

Iem for UK shoppers should be

completed later this year, after which the major clearing banks will decide whether to

go ahead with a pilot project.

The study was initiated fol-

lowing a working party report which esiabliahed the feasibility of EFTS (CW,

The feasibility atudy will

focus on a particular town, possibly a seaport, since most

people in such a town both live and work thare. The chosen

town will not necessarily be the one adopted for any pilot experiment which may follow

project team has concluded

would meet the full require-

ments of an EFTS retail system

he earliest. The British banks

ore smbitious than the sya-

are looking at something much

tem currently running in one

small town in France. Uiti-

proportion of retail and service

hat no equipment which

October 19, 1978).

it puts an annual £40 million is that most of the cash dispen-Banks, and looks for additional identifies as being supplied by 10 either Chubb or De lo Rue of the business from that quarter (CW, Companies. In descending order UK. The Philips PTS 8600 uses of market share that are value on this merket, which it sing mechanisms come from Philips cisima that it has 40% Redifon, Ventek, Data 100, Four Phase reports from CMC, Computer Automation, Cupertino, California that In Its GEC Computers, Data Logic, second quarter, ending June 30,

Inforex, MDS and ICL. It is alming to win 10% of this million on turnover up 20% at market with the Four Phase \$40.3 million. Turnover for the the P7000. It is built around a million. The agreement under ning to siscken their ties to their powerful 24-bit processor which which Philips markets Four raditional US suppliers, prin- can support up to 32 terminois. Phase products in Europe has clearly IBM, Burroughs and Cobol programming and a word been extended in December NCR, and to belooking seriously processing package are avail 1984.

Pilot scheme likely result of

outlets being equipped with terminals capable of reading

customers' mognetic stripe

cords and doing a direct debil

commissioned the study.

study into EFTS for shoppers 3608 direct debli terminals, online to the Banque Regionole

de l'Ain's IBM 370/138 main-

on magnetic tape, and the BACSTER program can not

only handla and translate data

but can also search up to 100 files for the data and select the

oppropriate records. Up to 29 different accounts can also be

TANDEM Computars, manu-

facturer of the high reheality Tandem is minicomputer sys-

tem, hoa won a third order from

Barclaya Bank. The machina on

order will have three processors

Third order

frame (CWI, Morch 15).

Communications emulstions

for the local authority market

have been done for attachmen

Io Honeywell, IBM, Burroughs

ICL and Univae mainframes in

the UK, so Philips Data Systems is confident of its skills in this

A third terminal systems pro

duct will be introduced in the

UK If there proves to be a need

for it the P8000. This is a lower

forms one arm of Philips Date

And the good news about that

tha 11 banks and two eredit The experiment la reported card companies which have to be a great success - except In the dress shops, where women have been reluctant to use thoir cards. The bank suspects Bourg-en-Bressa, 54 merchants, including suparthat women do not want their husbands to know how much

markets, boutiques and petrol Easier transfer of funds

After examining the ter-1900 computers who want to transfer money through Bankers' Automated Clearing in any format from tape or disc. minals now on the market, the Servicoa, BACS, can do ao ICL tapa-formatting program called BACSTER.

BACS provides a direct daurently exists.
If the go-ahead is given for a biting and crediting service to customers of the five biggest pliot project, it could not gat under way before 1982-83 at clesring banks in tha UK, using ICL 2960 and 1904S computars and greatly reduces tha "float" in the aystem, since it providea same day clearing of credits and debits instead of the usual mstely they anvisage a large

three-day period.

BACS requires that data is and will handle foreign exprovided in a specified format change data capture.

terminals will replace bank clerks'—report YOUR friendly neighbourhood be tha biggast sellera in terma

bank clerk is on the way out, certaioly in the US, and probably in Europe also, according to a new report* from Froat banks - and that is good news for two British companies, De la Rue and Chubb, which make and Sullivan on data com-munications in banking. the cash dispensing mechan-isms used in many of that Automatic teller terminals perated by the cuatomer will automatic termioals offered.

fall from an average \$30,000 of valua of the three types of tarminal widely used in branch per unit today, to \$20,000 by

Data Communications in Branch Banking, Frost and Sullivan Ltd. 104-112 Marylabone Laris, Loedon WIM 5FU Telephone 01-485 8377.

Micro-based translator

A LANGUAGE treining school in Aldershot le sa convinced of the valua of microprocessor-based pocket translaters that it is supplying each of its students with one as part of the course meterial. The machine is the US-made Creig M100, pictured right, which is claimed to be able to translate phroess as well as eingle words. Different lenguages can be provided by exchanging a ROM ipictured left.

Lou Fearnley, principal of the Cergate Language Centre, describes these machines as "only a start."

"Soon," he seys, "electronic translotors with large vocabularies eyntae and idiom capabilities will become widely used in the business ity, where traditional methods have not proved wholl

'Personal' trade association call

DOES the personal computer business in the UK need a trade association to look after its interests? in the view of Paul Rayner, new maneger of the Computer Workshop store in Leeds, it does, Rayner is writing to shout 100

companies oparating in the field in the UK, suggesting that a He says that though more and more people are becoming aware of the Importance and

Impact of microelectronics and microcomputers, the only voice that is raised on the subject net profits were up 38% at \$3.9 consistently is that of trode

selling the systems needs s coherent and unified voice. "After sll," he ssys, "we may all be small companies, but cumulatively we are probably as He visualises perhaps four meetings a year, coinciding with

linies, a committee would look after the association's affairs.

not necessarily disagree with what Jenkins has said, but he

feels strongly that the industry

involved in manufacturing and

Rayner con be contacted onsistently is that of trode during working hours at Computer Which puter Which puter Which park, Leeds, LS16 5LQ.

Extracting the meaning from legal papers is aim of course

A COURSE on computer science and law, with particular emphasis

on how computers can be used to anything the mounting from legal documents, le to be hald in 8 wensee in September.

Almod et computer scientiets, the course lasts eight days and will be restricted to shout 80 meeticlesses. participants. Some pieces will also be available for lawyare and legal research workers who have a knowledge of computing.

The course director le Profeeor Byen Niblatt, of University College Swanzes and other leg-

College, Ewansee, end other loc-turers will include Layman Alian from the US, Thomse Berthel, from West Germany, and Norman Numn-Price, of the UK.

Also lecturing will be Ronald Stamper, of LSE, whose Legal

of the most savanced ettempts to formalise legal and other rules in

nachine-processable form. Professor Niblatt sees a etrong possibility that developments I program sementice, such as Legal, will help in the drefting and Interpretation of legislation.

At the come time, the eccumu isted esperience ambadied in sophisticated logol systems may well provide ineights for the de-signer of computer programs.

A limited number of echaleretip places will be available or the course, which is backed both by the EEC and the SRC. Further dy the EEU and the Shu. Puthfor detaile are available from Dr P. W. Grant, Department of Camputer Sciance, University College, Singleton Pork, Swenees, Tel: 0792 28878 est 802.

Marketing people will find

Marketing Yearbook

A REFERENCE book that should prove a key source of information for anyone conthis a useful buy at £9.85 in soft covers, or £12.85 case-bound, cerned with marketing has been including post and packing. published in conjunction with the Instituta of Marketing. It is *Copies may be had from Marketing which contains details of a wide range of companies and services which aim to get news of products to tha right paople in the right markets.

A SET of accounting packages Most aspects of marketing are written in Business Basic for the covered in the extensive directories which list advertising agencies, postar companies, direct mail and house-to-house deliveries, newspapers and trade and technical journals, radio and TV companies, and treda

There are also sections on tha work and services of the in-stitute of Markating and on education and training facilities.
The book consists of over 360 A4 pages and could be made a little more manageable if the list of faire and exhibitions were eliminated, it would be for better to note the Organisers of exhibi-tions and the areas thay cover.

complete range of Data General machines is being marketed by Computerplan, of Hounslow, Middlesex. including psyroll, general, purchase and sales to software houses and OEMs.

High Road, London N2 9PJ.

Basic packages

the US increasingly require their computing either for a basic or to give more prominence to

Game, set and match

GUILDFORD and District Table Tennis Association is the unlikely-sounding guineo pig for o new computer system developed by MBS, an ogent for Jacquerd (now AM International)

As a local firm, MBS has produced free of chorge a system which produces lesgue tables for the 13 divisions in the Guildford league. It also ranks the 600 players. MBS is running the sys tem on one of its own Jecquard

All last yeer's recults have been put through the system aiready to produce rankings for

Big disc contract

THE high capscity ultra-compact line of CII-HB midi-discs designed and manufactured in France have won the company a five-year multimillion contract in the US. Customer is Datapoint Corp, whose terminal computers are sold in the UK by Ventek, The CII-HB D100 midi-disc line Includes 120. 60. 20 and 10 Megabyte drives (CW, May 3).

Major share

Maintenance of Norword, London, has acquired an unquantified "major share" in Disclean Services of Paris, Both companies specialise in on site disc

CLEANING up in Fronce, Dato

Contract with off

HONEYWELL has signed a long-term contract with Starage Technology Corp under which STC will supply Honeywell with its 1900 series of rock mounted tape drives on an OEM basis.

Honeywell switch

FIVE years of settled future de velopment and better throughput arc two of the mein reasons why the Bournemouth and District Woter Compony says II has switched from an IBM System 3 to a Honeywell Level 62 system. Msin epplications on tho £113 000 machine will include metered and unmetered billing. share and asset registers and on integrated accounting system. Processing fectities will also be pruvided to the neorby West Hampshire Water Company.

Patent au in e

ADVICE to employees on how to patent their inventions and make sure they do not lose their rights in them to their firma ia the subject of a pamphlel published by AUEW TASS, the technical staff union. The ramifications of the 1977 Pstenta Act are exploined, particularly the statutory rights now given recognised negotiate compensation pay-

Switch to NCR

NOW with olmost 100 retail outlats, the Homa Charm group has decided to replace IIs Gross mechanical registers with 150 NCR 2140 point of sale ter-minals. They will be installed at ledger packages, the software is minals. They will be installed at available both to and-users and the group's Texas Homecare

Two views on 'literacy'

GRADUATE business schools in our MBAs be able to demongrasp of computer "literacy" or Harvard Business, School, on for still higher proficiancy, the other hand, sees no need for Wharton School at the Univer courses on the details of comsity of Pennsylvania says. "Wa puter technology, which is feel it's absolutely critical that, changing all the time anyway.

strate a working knowledge of advanced computer programs ming."
Harvard Business School on

restructures

headquartered in Brentford, continues unclianged, but the four control divisions have been formed into a second subsidiary, Honeywell Control Systems, headquartered in Bracknell.

Honeywell Ltd, which formerly embraced the control activ ities as well as being a holding company for the computer busi ness, now becomes only a hol-

Burroughs booms

BUSINESS is booming at Burroughs, with half-year net profit up 22% at \$111 milliun on turnover up 16% at \$1,277 million. Safes were the donlinant revenue generator, up 19% compared with the same period last year, while rental and service business rose 13%. Drders in hand worldwide stood at a

record level at the end of June. Cheaper Flexiesse

ATLANTIC Computer Leading has announced price reductions on its three and four year Flexlease packages for new and used IBM 303X systems. The charges for a three year Flexicase are down by 10.5%, while the cuts on four vear leases ore down by either 5.5% or 4.5% depending on whether the Ficxlense alluws the customer to apprade his ninchine after three or four

Tymshare profits

TYMSHARE, the big US based time sharing bureau, has announced that its turnover in 1978 was \$149.6 million, 47% up on 1977. Pre-tax profits came to \$19.4 million in 1978, a 23% increase on the previous year. The company's UK subsidiary chalked up sales of £1.2 million and pre-thx profits of £105,000 in 1978 compared with £625,000 und £41,000 in 1977.

Tape subsystem

DIGITAL Equipment PDP-11 computers based on the Unibus cun now use a tape subsystem from DEC that provides 1600 bps phase encoded recording and read/write speeds of 45 inches per second. Called the TS11. the system includes a microprncessor-based formatter/controller and costs £8,708 and £9,686, for rack and cahinet mounted versions res-

Printer price cut

PRICES of the AJB60 and matrix printer terminal from Anderson Jacobson have been reduced by up to £200. The 60 chps version now costs £1,745, while the 120 chps model is now priced at £1,945. One reason for the cuts, according to AJ, is the strengthening of the pound in

Bus cards go IBM

WITH the number of pussengers buying the cheap rate Travel-carde for bus and transport increasing at the rate of 150,000 a year, the West Midlands Passenger Transport Executive has decided to install an IBM Series I system to handle applications and issue embossed plastic cards.

First sales

MSA's general ledger system is being installed by Sun Alliance Insumnce Group in one of the first sales to be reported by the company since its UK launch (Software File, March 22). Valued at £23,000, the software will run on an IBM 303X and replaces a manual system

Honeywell UK A writer's style THE UK operations of Honeywell have been restructured into two subsidiarles under a holding company. The existing Honeywell Information Systems, as fingerprints

DID Shakespeare or Bacon write Homlet? Were the Casket letters written by Mary Queen of

To students of literoture and of history these are three separate questions, but to a scientist they are three examples of a single problem for which a general solution is required, the problem of recognising a person from his written or spoken

The descriptive science which enables this to be done is called

As a recugnition system stylometry shares the characcriatics of all such systems and in its development it offers many parallels to the evolution of similar systems. The best known recognition system is that used hy police forces for the identification of criminals.

As the 19th century progressed, cities, crime and police forces all grew inrger. A pressing need arose for a system by which an officer could recognise a criminal from a description. The Paris police led in the creation of a filing system hin as all the entries were under under names and the criminals used nlisses no criminal had ever been recognised from a description. The descriptions were portroits paries, the kind of thing which might be found in a letter, eg "the criminal is a young lady of slender huild, well-dressed and well-spoken, of good man-

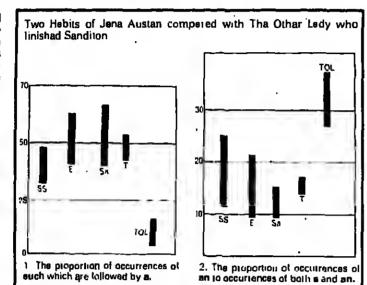
ners and education." For any serious use this kind nf description is hopeless. There is too little information, It is la too few categories which are both ill-defined and variable and

Shakespeare

IT FB IS

IT FWS

by Andrew Morton



such which are followed by a. SS is a sample from Sansa and Sansibility, E one from Emma, Sa from Sanditon as written by Miss Austen. T a combined sample from

natural and to deliberate altera-

tha three; TOL is the work of Tha Othar Lady.

It was supposed that an advance was made when the same information was trunslated into figures, so that the suspect becumes a female, 62 inches toll. weight obout 105 lbs, aged around 25 years and having long dark halr. This is a little better, but it is still not good enough to enable identity to be estublished with any precision.

The third stage arrives when someone asks the right question. If you want to identify one person out uf a few billion, using the information is subject to characteristics which are easy to

fteicher

The division of the play Henry VIII between Shakespaure end Fletcher.

This is a simplified cumeum chart of two habits, how often it is immediately followed by is and how offen it stands as the first word of sentences. The

riverage for Shaksapeara, takan from Julius Caesar. Titus Andronicus and

Pericles, is horizontal. The everage for the Shekeepeareen scanes of Henry

Vttl is very naer to horizontal, the averega for Fletcher is much higher and so

the chert climbs to the right. The scenes are in taxt order es taken from the two

classify, to record and to compare, characteristics that can be altered or concealed only with great difficulty, what kind of information will tell you what ynu want to know?

The first successful system was that of Bertlilon whose futher was professor of anthropology in Puris. The som-knew that a lot of information hy concealed in skeletons and so hased his system on a few physical measurements, og tho ircumference of the head, the distance from elbow to finger-

He mnde the first identificatiun by matching records. However, his system was not really practical, since it relied on precision measurements heing made as a matter of routine by untutored clerks on unwilling subjects, it was overtaken by the development of finger printing, the first of a family of systems based upon blulogical

The introduction of nil scientific recognition systems is resisted. It was pointed out that fingerprints are an affront to common sense, that from fingerprints no officer could recognise his own wife or children, and though it might seem to work, no advocate of the system could explain why it did work. It was more than 100 years after their introduction that the molecular blologists were to do

The first step towards a recognition system for literary studies is that of stylistic description. In many ways this is the most lively stoge, for everyone can use his own criteria to support conclusions congenial to him.

But as they continue, styllstic studies, raveal two fatal defects. The first is often expreased by the scholara themselves who will claim to be abla to recogniae any writer by his style but also be able to so alter their own style that recognition is impossible. The other difficulty is the accumulation of cataetrophic fallures by which students of styla are

continually embarrassed. A recant example was writers and texts mean that n reported in the Guardian: the computer is essential in critics of both the Naw Review and the Times Literary Supplement had given opinions that an

mitation of Cleland was rather poor, falling to notice that in-

The next step is to intruduce some stutistics into the stylistic description. This comes from an appreciation that a complete description of a writer will not only tell you which habits he has but how often he employs them. But as long as the figures only ornament a subjective opinion the result is no better than the purely qualitative description.

three essential principles. The first is that it is a science even if you are interested only io a single problem the method must be validated on a range of texts and writers before it can be

upplied to a particular case.

The second principle is that stylometry must be statistical. Writers do not repeat themselves, rather they resemble themselves. This means that while it would be nonsensierd to say that ten pages of Dirkens will have 50 occurrences of AND, it might make very good sense to say that len pages of Dickens will contain, on the average, 50 occurrences. Hubits vary around average levels and so comparisons must be made by

The third principle of counts, but for anything me stylometry is that as all writers extensive the machine and in any language have so much in cummon - the language in which they write, the rules and conventions of its use, the social, cultural and lilstorical background of their lives - the hest discriminators are not the few idiosyncrasles which they might share with few other writers, but the different rates at which they use hubits common to all

This is clearly seen in the choice of words on which stylometry is based. As our choice of word is affected by subject matter, by mood, by recent experience, by it hust of factors, it follows that the only safe foundation for stylometry is supplied by the words which we must use for any subject, in every mood and on all occasions. These are the words uptly called, by the Americans, the filler words, the frequent cunnectives which form the skeletun which

supports the text. Although the high rate of is their most striking characteristic, It is not the most useful one, that distinction belonging to their frequency of occurrence in certain positions.

Position is relative, the sequence within sentences. Ist. 2nd, 3rd word and so un, con be measured; the occurrence of a word before or after another word, tha mark word, can ba recorded; or its occurrence in the intervals between succassive occurrences of other words.

Different cunventions are suited to different circumstances and the large number of possibly uaeful measurements. together with the necessity of examining these over a range of stylometric studias. It is posaible to apply a known result to a ilmited casa by using hand

cluded in it were passages, one of 300 wurds, lifted from Cleland.

Public interest in computated linguistics was first around whan it was shown that evidence for the authoritied literary texts could be done from the study of en sutter ndividual usage - atylometry This is now finding a much wider ranga of applications, for Stylometry begins when it is Instance in the legal field for understood that the subject has the verification of wills, and of

polica stetemants. Andrew Motton Mimself created a legal pracedentia 1974 with his avidence bit only soven of 11 police rule mants submitted in a case he baan written by the delendant who wen then equined.

Andraw Morton is cames Out literary research in the De partnient of Computer Science of the University of Edinburgh, using EMACS, the Edinburgh Mitti-Accoas System. He is also a minister of the Church of Scutinut. Ha fs the uter et Literary Dataction, 111 1). £10.50, published by South Publishing Co of Epping.

It is not possible even! suggest the range of apple-tions of stylometry, Elizabeth literature hus a number el ucertain texts where the unc tainty derives from the lark historical information; Victoria literature abounds with soon mous publications where the unanymity is a condition imposed by the publisher.

But when deliberate concer ments are taken into account the applications range from police statements, wills and other legal documents to impositions made by medient clulming not to represent but to he another person.

No one will claim the stylometry will answer all que tions about the authorship at integrity of literary lexis but in the surface of t will solve a great number current problems and allo attention to move to me important mattars.

In a short general sure this kind it vide any detailed illustra hut two diagrams show to applications. The first is monstrate the difference he ween Jane Austen and the Lady who completed in 1921 the novel which had lain self-lahed since Miss Austra's deshi In literary terms the imilation quite good but the probability that 4,000 words of the Other Lady would be taken as la Austen is less than one in on thousand million.

thousand million.

The second illustration is a Shakespeara, a disputed gial Shakespeara, a disputed gial Henry VIII it has been state that this is the tesuling a contact that this between Shakespear boration between Shakespear boration between Shakes, and Fletcher. The case was by Speeding in 1850 and has been tested by Thomas Merial His conclusion, is highly in all but sky the case of Daspita heving to draw on its aubaten-tiel financial reserves as a result of the current awing towarde leading by usars the Italian government and several big of IBM computers and IBM compatible piocessona, Amdehi Corp still eppaere

to have the most eacure future of all the The company's position in Europa has been further consolidated with the firms in the growing lina-up of software competible mechina menufacturers. aatablishmant of an assembly plant in Over the last two years Amdehi has Iraland end an agreemant with the been activaly marketing ita 470 aeriae in Franch Thomson group under which

ket for large scela mainfremes by 19B3.

KEITH JONES of Computer Weekly visited the world heedquarters of

achiavad some impressive sales aucceasas, notably with British Airweys, (CW, May 3).

Amdahi Corp at Sunnyvala, California, a few weeks ago and talked to two of the Amdahi must also have been ancou-raged by the report published earlier O'Conneil, sanior vice president corpothis year by New York stockbrokers reta marketing, the man in charge of the Paine Webber Mitchell Hutchine (CW, company's international sales opera-Mey 10), which pradicted that it tions, and Dr Andy Wang, director of would have cornered 20% of the mar-ket for large scela mainfremes by 1983. to maintein Amdehi's vital lead over IBM in the eras of hardware perfor-

maintenance in the field and

f the problems that ariae."

they can take care of about 90%

Diagnostics are normally

handled locally using an inbuilt

16-bit minicomputer which con-

stantly monitors the perfor-

mance of the Amdahl machine

and which generates printout

for the local maintenance staff.



engineers at the remote instal

Not aurprisingly, Amdahl Corp is tight-lipped about pre-cisely what form the forthcoming H series will take, although one hardware ingredient of H aeries configurations looks like being the 3880 disc controller announced with the 4300 line earliar this year,

If they are unable to fix the fault D'Connell revealed, "We have rapidly they connact the mini online to an Amdahi Diagnostic ordered a bunch of 3880s to see Assistance Centre, Amdac, how they affect the channels on where expert engineers check our machines and we are the diagnostic information and looking into factors like addrestrained to handfe hardware phone instructions back to the

Amdahl looks to a secure future

Asked about the competition

Amdahl, O'Connell commented

"We need to build up a solld

announce prices, IBM can also

"Dur biggest problem la

growth as a company can only

not afford to make one.

a lot of potential customers for Amdehl machines had signed letters of Intent for the IBM sys-

This frank statement was made by Bill D'Connell In a discusalon about Amdahl's European markating strategy. Despite this view, O'Connell is

certainly not unhappy with Amdahl'a performance in most parts of Europe, and he believes that the company la now taking off in West Garmany, which has been the least successful major European market for Amdahl until now. The firm haa, however, won two of its first European orders there - from the German space research organisation, DRVLR, and the

Max Planck Institute in Munich. O'Connell continued, "After we sold those two machines in West Germany at tha end of

moving Into Europa. IBM had already announced the 3033, and tomers there, including Ford with customers in Europe than and we need the best IBM in the US, because they plan a long time ahead." Mercedes and aavings banks in Munich and Nuramburg. By the from IBM continually faced by end of the year we hope to have more machines installed in Germany than In the UK, even though Peter Williams, the customer base before the IBM H managing director of Amdahl series arrives. Dne blg problem for us is that IBM can forward UK, has bet me we won't.

"We got our salesforce organlsed quickest in the UK and Peter Williams is a great asset. make a lot of mistakes. Wa can-We should have about 18 machines installed in the UK by finding the right people. Dur the end of the year."

Orders announced so far by Amdahl In the UK include four machines from British Airways and one each from BDC Datasolve, Kays of Worcester, Chrysler, BL Cars, Ford, Rolls-Royce and Massey-Ferguson.

O'Connell explained, "We have been very successful in selling to manufacturing conpnnles in Europe because they 1976 there was a gap. The main are used to buying from two reason was the toughness uf vendors, But there is no doubt

No dramatic change in technology

ACCORDING to Andy Wong, Amdahi Corp is currently work have to be discreet to each of have to be discreet to each of ing on integrated circuit techlology for machines two generations in the future, but the company is not going to make any dramatic chonge in technology for some considerable time at least.

He explained, "Bipolar techology will be king here ut Amdahl for a long time. The next two generations of machines will continue to employ emitter-



will be king hara for a long time." coupled logic, probably current

Working closely with Amdahl on these future developments are two major collaborators -Molorola and ona of Amdahl's big minority ahareholdara, Asked how secura Amdahl's

relationship was with thase two-organisations, Wang commented, "We have an ironslad agraement with both orola and Fujitsu to stop them aeding the devices we jobily develop with them to imputer manufacturara. We deal separately with

them about what the other is doing, but both of them trust us.

"With Fujitsu we have a joint effort in new semiconductor technology, which is a continu-ation of an agreement first signed in 1972." Amdahl's relationship with

Motorola is that of customer and supplier, Motorola's plant at Phoenix, Arlzona, now being the principal source of Amduhi's ECL logic chips, Motorola used to second-aource parta made for Amdahl by Advanced Micro. Systams before AMS left the olpolar business in the mid-

Amdahi has agreed with Fujitsu to use tha Japanese firm as its principal source of custom LSI components for the next genaration of Amdahi com-Asked whather Amdahi was

taking Josephson junction technology serioualy, in viaw of IBM's much publicised work i the cryoganic superconductor area, Andy Wang commented, "Wa ara not working on Josephson technology, because its practical application is too far ahaad in the future. Moreover, there are bound to be serious maintenanca problems with Josephson-based machines, and I think they will only be used for special systems."
the much mora prosaic

pragant day area of MOS mamory technology, Amdahl adonts a conservative approach Tha main storas of ite 470 machines are still built from 4K bit chips and the company will only start using ISK parts when they become cheapar to use than 4K. About 70% of Amdahl's 4K. chips come from Mostek and tha rest from Texas Instruments and

Build a better with the users of

microelectronics -

people.
"Wa get most of our mar-

keting and software personnel from IBM but on the engineering

side we are now trying to bring

in college graduates rather than

taking engineers from iBM's big systems development centre at

Highlighting one way in

which Amdahi tries to make

maximum use of its preclous

workforce, D'Connell explained.

"Our systems engineers are also

oughkeepsle."

NCROSYSIEMS'80

Wembley Conference Centre, January 30 to February 1,1980

Microsystems is a conference end exhibition which alerts industrielists end businessmen to the neture of this Second Industrial Revolution, and bridges the gap between the microelectronics expert and the engineers, scientists, systems designers, educationalists and others who use his skill and products. It is an open door to better business for suppliers of both hardware and software microprocessors, memories, interfaces, peripherals.

In its third year, it moves from a hotel show to the more spacious Wembley Conference Centre, with some 1,400M² of exhibition space.

TO TAKE PART IN MICROSYSTEMS '80, CONTACT, LLOYO COLLINS OF "COMPUTER WEEKLY" ON 01-261 8743 OR 8022 OR WRITE TO HIM AT ROOM 13, DORSET HOUSE, STAMFORD STREET, LONDON, SET PLU

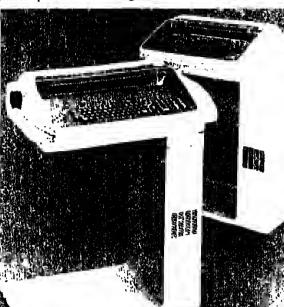
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PRODUCT NOTES

New range of printers from Data General



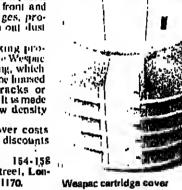
Cartridge cover

SIDE and front loading cartridges can now be protected when off the drive by a security cartridge cover from Wespac. It fits over the base of front and side loading cartridges, pro-viding a seal to keep out dust

Storage and stacking pro-blens are solved by the Wespic cover's positive locking, which enables cortridges to be housed safely in vertical racks or stocked horizontally. It is made polythene.
The cartridge cover costs

£4.00 and quantity discounts are available.

Weapac (CW), 154-158 Shoredich High Street, Lon-don, El. Tel: 01-729 1170.



The FSP40 measures 205

3.6Kg It operates from n 1:

English Numbering Machines (CW), Printer Divi

210 x 105 mm, and weigh

Miniature printer

A MINIATURE printer, which to the murhead for plotting pictures, diagrams and text of euryes and circles and produce any kind, has been developed accurate maps, drawings and by English Numbering Copies of photographs.

The FSP40 measures 205 x occupies 400 square cm of desk

Uniffected by vibration, the ESP40 can operate in any josi-tron, even upside down. It prints on electro-sensitive paper at rates of up to 280 characters per second. The print-out is clear and is not attected red and altra violet light.

A built in nucroprocessor enables printing of upper and lower cuse characters in various styles and widths.

Miniterms

nortable terminals are available with removable storage media. Both microprocessor bosed models are allke, except that the 1205 has the addition of the built-in acoustic coupler. They both feature n bulli-in mini-cassette tope unit with 88,000 characters and integral 8K randoin access memory expanduhle to 32K.

Teleprinter Equipment (CW), 70-82 Akemen Street, Tring, Herts. HP23 GAJ. Tel: 0442 82

Floppy tray

f'LOPPY discs can now be stored easily and inexpensively with the desk top tray intro-duced by Templestock. The tray can hold between 60 and 80

plied by Templestock. and three fixed reduction ratios malfunction.
Templestock (CW) I and a variable zoom reduction Rank Xerox (UK) (CW),
Revenscourt Park, London W8 The Xerox 5400 copies at a Bridge House Oxford Road,
OTZ. Tal. 01-629 2533. rate of 15 per infinite, with a Uxbridge, Middlesex.

has been numounced by Duta General. They print at 180 characters per second, are logic send/receive configurations.

The terminal printers use Duta General's 16-bit Micronova interoprocessar to control the various printer functions. variable character formuls. Dasher TP2 printers are avall-6075 and KSR model 6077 print in normal and elongated character widths; RO model 8078

> Data General (CW), Hounsow House, 724-734 London Road, Hounalow, Middlesax. Tel: 01-572 7455.

and KSR model 6078 nlso print

condensed characters at 16.5 to

Data logger

THE Madel 22008 data logge from Fluke has the ability to handle RTO inputs as well as standard thermocouple, val tage and current transmitter sources. Other features include enhanced alarm and trip facil-ities and a built -in 24 haur time

'day clock, Fluke **in**ternat**io**nal (CW). Colonial Way, Wetford, Herts. Tel: Watford 40511,

Extel 951

THE Extel 951 mlcrodisc is minidisc recorder featuring exlensive search and editing facilities. It will provide a storage capacity of over 200,000 lible disc, and offera full add. delete and replace culting on file contents and high speed searching for chosen strings of up to 15 characters. The Extel 951 is ait RS 232C compatible

printents. The range includes storage binders, filing etorage units and storage trolloys. Twinlock OP filing uffers a Tho Exchange Telegraph Company (CW), 73/75 Scrutton Street, London, EC2, Tel: 01-739

Intel kit

INTEL has ennounced the 8088, its 18-bit microrocessor, and at the same completa MCS-86 micro computer system on e eingle board in kit form, and is deatgaed to enable ancineers o gain expariance of the hardware, architectura and mechine code of the 8086. It containe att the necessary

tom in a faw haura.
Intel Corp 10K) Lid (CW), 4
Botwoon Towns Rond, Cowloy.
Oxford OX4 3N8. Tal 0865 771431.



RANK Xerox has intruduced duplicators that incorporate along its designed for the low to microprocessors, the Xerox medium copy volume user, 8400, 5400 and 3400. The 9400 making between 5,000 and floppy discs without risk of fluringe if required the trays ran be placed in trollers or hanging frames in cabinets.

Also lockable lids can be supplied by Templestock.

8400. 5400 and 3400. The 9400 making between 5,000 and 25,000 copies per month. All copying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies three machines have a discopying et a rate uf 7,200 copies a rate uf 7,200 co making between 5,000 and 25,000 copies per month. All

TV camera systems

GRAPHIC Display 5ystems of Cambridge has introduced transcribed. The GDS-2000A and its GDS-2000H, as additions to in GDS-2000H country to GDS-2000H. DS-2000 range of TV camen The basic GDS-2000 cons e

of a TV camera mounted or hand, pivot-hinged to the di-play. The GD5-2000A base more sophisticated mount giving multi-lens, variable image magnification feeling with the optional use of the

The GOS-2000H. using the broadcast quality capter conners has the same mount arrangement and a high man tion and prices are from the

Rastoriser

MEGATEK's Rastoriaris terface that produces having for the Megraphic 7000 wor refresh terminal in 16-15 seconds. The Megraphe 26 graphics system feature lion and a 32 bit micro-bus controller. Optionally available are select erase bands to dushed line with harden retate, scale, clip and zona s

options. Megstek (CW), 3681 Ser rento Valley Blvd, Sm Bigs Californis, 92121, USA &

Keyboard

trailed duta processing key work has been america is designed specifical for Me, unchine tool ass's; and celling. Features ochie muchine to the customer: The Decwriter IV costs under chiding data transcission could be rented from these, and program output



Kinson recorder event recorder, developed by Kineon Electronice, is designed to capture event data in medical and industriol applications. It is known as

applicatione. It le known es the Model 4001 end con-

COMPUTER terminal suckets

are now available from Tracesses A. The ESIGE method are

for RS 232C type terminals. They comprise white rectangu-lar plates compatible in style

and fitting with MK's range of electrical outlets and boxes.

The Whizzard family

vector refresh graphic systems known as the "Whizzerd", which comprises graphic

aripherals, graphic terminals and stand-

ione graphic processing systems.
The Whizzard 7000 series features a new

improved vector generator, and enother fea-ture is the three dimensional rotation and an

optionel colour monitor. Four colours are stendard, with an optional fifth colour evall-able. The Whizzard 7000 incorporate ell the standard feetures offered by the older

Magagraphic 7000 system.
For Nove or Eclipse owners, the Whizzard 8000 family offers refresh graphics with selective erase, translation, rotation, sceling

Twinlock storage

TWINLOCK UK his Intro-

duced a varied range of pro-

choice of lateral or vertical sus-pension systems, and the Multi-Stor loterni filing cabinet allows a large filing enpecity with the added benefit of

security. The lockable quarter width doors pratect the binders

The cupboard is 75 Inches tall

and will hold five tiers of

standard depth bluders. Also

eablact, with a lockable railer

shutter door, and the universal

rolley, suitable for conventio-

nni suspension files. Twininek (UK) (CW), 38

Croydon Rooil, Beckenhain, Kent. Tel: 01-850 4818.

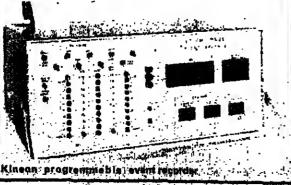
HP plotter

THE lolest platter from

Hewlett-Packard, the HP 7225A is able to provide hard copy graphics from micro-

rovide publication quality

plots by drawing clean con-tinuous lines. The HP 7225A plots at 250 mm/s between



characters per second for quick One, two or four sockets are annotation.

One, two or four sockets are available on each plate.

Hewlett-Packard (CW), King Daceward (CW), The Com-Street Lane, Winnersh, puter Centre, Bugbrooke Road,

Decwriter IV from

s stand-alone processor, RS 232C-com

municating terminal or dust board MG552 processor for installing within a customer's Novs or Eclipse computer. Whiz-

Novs or Eclipse computer. Whizzard 5014 systems are designed easily to replace, and be upward compatible with, the Taktronix 4014 TM series of storage tube

Magetek Grephic software is a Fortran

package which is deelgned to make the Whizzerd a user oriented system.

Magatek (CW), 3931 Sorrento Vallay Soulevard, San Diego, California, 92121, USA. Tal (0101-714) 455 5590

AN addition to the Rair range of Olgital Equipment terminals is the Decwriter IV, a 300 band at speeds of up to 45 clips, Small and lightweight, it is designed for operator convenience, and one of its undo fentures is its the keyboard or the bost com-

Reference Control Tape Service Control Tape Service Rair (CW), 30-32 Neal Street, Glaziers Lane, Normand; London, WC2, Tel: 01-836-1683.

The HP 3078A

FOR use in menufecturing companies, on the factory floor and in offices, Hewlett-Peckerd hes introduced e range of three date terminels. The HP 3075A is a desktop terminel for applications such as finence, atock

control end purchasing.
A well mounted version, the
HP 3076A, may be fitted with a multifunction reader end printer so that it can be used to record work in progress in a mechine shop. The HP 3077A, we have be used for employee time reporting or to control access to restricted areas.

Options include a choice of numeric or alphantimesic kayes beards and displays, and a while the companion of the companion of

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I could conservatively estimate that at least 6,000 new jobs will be generated technicians and technologists in the manufacturing sector of the industry. With ceeding 30% in the home export bias.

an example of the level and puter professionals. calibre of work and com-

nvestment is about £42 yenr.

plant et Clonmel and Cor

current level of 50 to over pete for this substantial Owen Dalton, the Irish tions. business, thus creating a Computer Society is Needs to Attract its Ex. the Gnlway plant is in ex- further demand for computer personnel. The momentum of these

Amdahl, Amdahl will shortly move to a perevents has taken some time manent plant in North Dublin from temporary premises, and its employment level rise from 250 hy end-1979 to over 750 by 1983. Verbatim. Verbatim

Corp, a menufacturer of pnny has plans to build a of oversees personnel. five factory complex at the Ruheen industrial estate in Limerick and expand to 1,400 people in employment

the software industry to establish business units in the growth rate now ex- Ireland, particularly with an 10 attract Mostek to Lire,

grammer alone will be in businesses such as the leges of higher education. excess of 400 a year for at recently formed interactive The recent National least the next five years. Composing Limited, a which brings us to 1984. Digital agency and PDP-11 As an indication of the based interactive hureau, ing projects are a staff of at least 20 com-

The small business sysgovernment through its growth area. In 1979 alone, agency, the Industriol De- one manufacturer plans to ment in Eire to the extent of elopment Authority (IDA) install 50 systems for new approximately £2,000 per Mostek. The Dailos-based users, and it is conserfinally. Mostek Corp set up an advantely estimated that a AnCo (the Industrial vance plant in North Dublin total of over 200 systems Training Centre) was lesting microprocessors in will be installed for new July, 1979. Total capital users country wide this

million. Plans are to Against this background early 1980 and the total opportunity for computer computer personnel. yment should reoch manufacturers and sup. now operational in its new Packard, Redifon, and the the CIJEC. puter Mechinery Com- Under the committed and

to build up and many organisations, including stituting a drive to encourage new members. governments, tend to act after the event. Hnwever, the significance ond

importance of these developments in terms of added removable magnetic data value and employment to storage media, has set up an the economy is now well Irish-based facility in and truly understood by the Limerick. It manufactures Irish government, and With the fastest growing such products as cossettes, through its agencies it is economy in the EEC and the data cartridges, floppy also making additional lowest density population, discs, mini-cassettes, mag- funds available and devc-Ireland has a lot to offer to netic cards and mini-discs. loping programmes to in-Currently employing more crease education levels and encourage the participation

The following are examples of some of the

.The IDA has recently allocated some £3 million to Another area in which the the universities and techni-IDA is contributing to the cal colleges to encourage growth of computing in Ire- them to expand their comland is that of incentives to puter education pro-

the Irish government is computer market, it is esThrough its Entre funding a £1 million electimated that the shortfall of preneurial Scheine, the IDA
Tronics laboratory, to be computer personnel of the has encouraged the format located within one of the basic level of computer pro-

Manpower programme, advertised widely in the UK and cutilled The Good Life, evel of activity currently which over the next two is an example of the recoglaftuencing developments, years will probably employ nition of a need to altract the following projects are a staff of at least 20 con-

I understand that the government will now subnitment on the port of the tems morket is now a major sidise relocation costs for personnel offered employ-

recently allocated an additional £1.7 million in the funds for the purpose of increasing its truining facilmanufacturesilicon chips in there is a recognisoble lities for electronic and

Two bodles which also pliers, most of which are reflact a growing com: Digital. The Digital expanding. Others new to musty awareness are the Equipment Company is ireland such as Hewlett Ireland Such as Hewlett

employment there is expany are now establishing energetic guidance of the

outtion	Satery band	Sonus	Total - income	Fringa benefits
lenulecturing managar	£12,000 £16,000	Possible year-and 10%-20% of gross		Company car
roduct engineer .	£6,000-£10,000	Possible year and 5%-10% of gross	o£10,300	Car allowenes
ere blocesered menagar	£11,000-£14,000	Poseible year and 7%-10% of gross	c£13,000	Company car
ales	£6,000-£7,000	€6,000+	c£12,000	+ Company car
yetema enelys t	£7,300 £6,300		028,000	Car allowence
logrammer .	£6,300 £7,300	28	c£7,000	Overnms pajd
ingineering meneger	65,000-69,000		c£8,500	Company car
anior engineer	£6,000-£7,500		o£7,000	Company car.
Engineer ·	€8,000-€6,500		c£6,000	Company car Oyartima pait
Figure 1. Tebte of possibl	THE PROPERTY CONTINUE	1 400	e and design	Contractors of

upgrading its image to

1978 in an effort to expanding DP community. accelerate and influence the It acts as no interface to the provision of education EEC and is currently infacilities by the government through universities, col-The society's education leges and schools. It is comsub-committee hos pro- posed of representatives of duced two excellent reports. most if not all of the organentitled Crash Training isstions associated with the Programme for Computer computer industry.

CIJEC, was formed in late

The organisations are the opportunities for cureer ad-Programmers, and Proposal for Infra-Structure of Com- Irish Computer Society, the vancement in secure

managament, marketing and personnal consult-ancy, in association with insight of London.

Irish Federation of Com- employment and chances to puter Users, the Confederaexpand your experience.

and Technology, the Irish are conservatively estimated to be at least 20% Association and the Irish higher than for comparable Business Efficiency and positions in the UK. This Trade Association. trend is evident in Figure 1. which serves to illustrate some typical income levels. clear message in our ex-Obviously these can only be leagues is that in Ireland taken as a guideline, as approximate mid-points in

Salary and income pack

ages ore also genred to

salary bands have been

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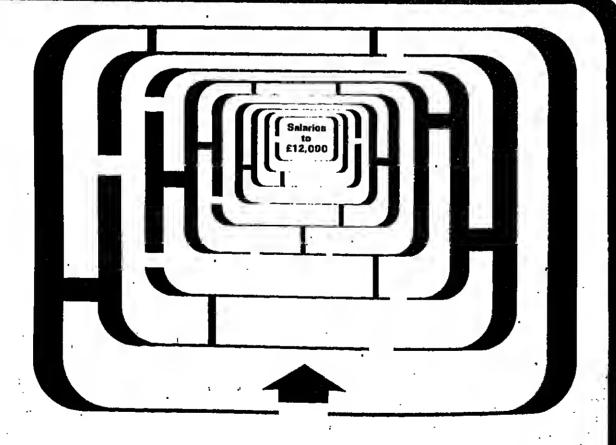
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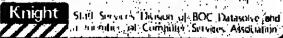
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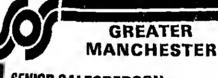
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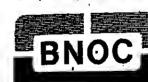
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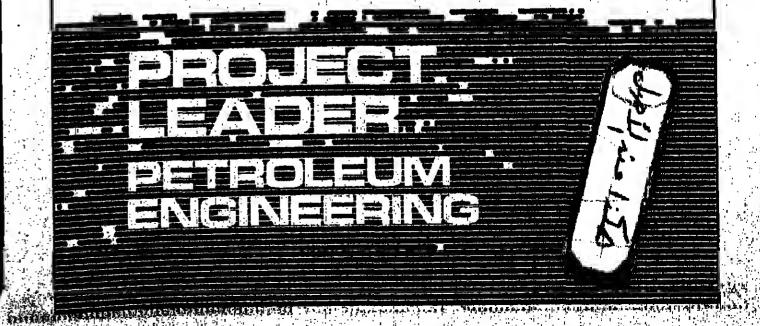
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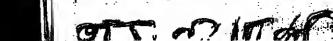
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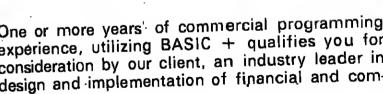
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Research Assistant in Computing

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The research assistant will maintain and develop software and staff and students in using the systems end writing that one and using leasts and preferebly have expenses of RYST programs. Considerates should preferebly have expenses of RYST and using leasts and Forrat in this Secial Science.

Shiery, depending on eag., qualifications and expensive of secretary and the second content of the Research of the Ryst and the second content of the Research of the Ryst and Secretary, University of British Secretary.

- SURREY N. LONDON

Stati Services Division of BOC Datason Member of Computer Services Associate

THE SALES AND MARKETING BIT MONEY MATTERS-1

Heart of the selling process

my reluctance and inse-

curlty in making a fairly

emphatic statement on the

lieve this is the heart of the

debts due for immediate

payment, with particular

emphasis on supplies, rent and payroll. Certainly no

company can afford to ex-

pose itself in financial terms

to either the vagaries of

market, production and

sales fluctuations, or the

i therefore find it astonish

ing that so many sales men believe - and their com-

tardiness of its debtors.

THE "That's what it's all panies don't dispute - that the flow rate of orders and maney into the company is basically a concelted nne. It not their problem. As long presumes a total knowledge as they reach their targets of the topic concerned; an by selling at a competitive absolute scope of information and experience at the JC level - and a don't mean Jimmy Carter! The only reason 1 make this remark is to emphasise

topic of selling.
However, armed with the disclaimer of being obliged to say something in order to emphasise the main point of this item about the money related aspects of selling. have to run the risk of appearing arrogant. "The essence of selling is the identification and suffisfaction of a need in return for a payment." I know that one can easily and reasonably modify this statement in dozens of ways, but I be-

one is involved with nuclear power stations or the world's dilest profession. If I was obliged to augfirst reaction would be to add the following qualificaline genels to a half

prospecting is an activity sylm haraket piace when one runs our of mospects. The implications of this attitude on the related frequency of incoming orders compared is maintaining a balanced with the consistent effect of and positive flow of cash so regular prospecting, should that one has sufficient liquid assets to cover all

that the importance of ongoing sales prospecting becomes less us the sales cycle extends, but by and large the salesman who sees prospecting as a spasmodic and transient expedient is also one who is making a valid contribution towards the potential bankruptcy of

TRADER

PRODUCT NOTES

Printer enhancement

ALL printers in the Sodeco range supplied by Landis and Gyr are now available for printing in either "text mode" or "data mode."

Text mode is where the last line is printed at the foot of the pener roll printing. Outs mode an addom paper winding unit

flon, Landis and Gyr Ltd (CW) Freepost, London, W3 8BR. Tel-01-992 53 | t. Talex 21486. Name change

FILE system apecialists letleys, part of the Wilkes group, has changed its name to letleye

The Landle and Gyr Seddes the requisite circular alphanumerte PR printer sequence, ere 5.1.3.10 and bears.

OFT OF MAR

Computer Services Manager

Marconi Space and Defence Systems Ltd., Europe's Number One company in the field of torpedo development, has a vacancy for a Computer Services Manager on the Sting Ray project at Stanmore.

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